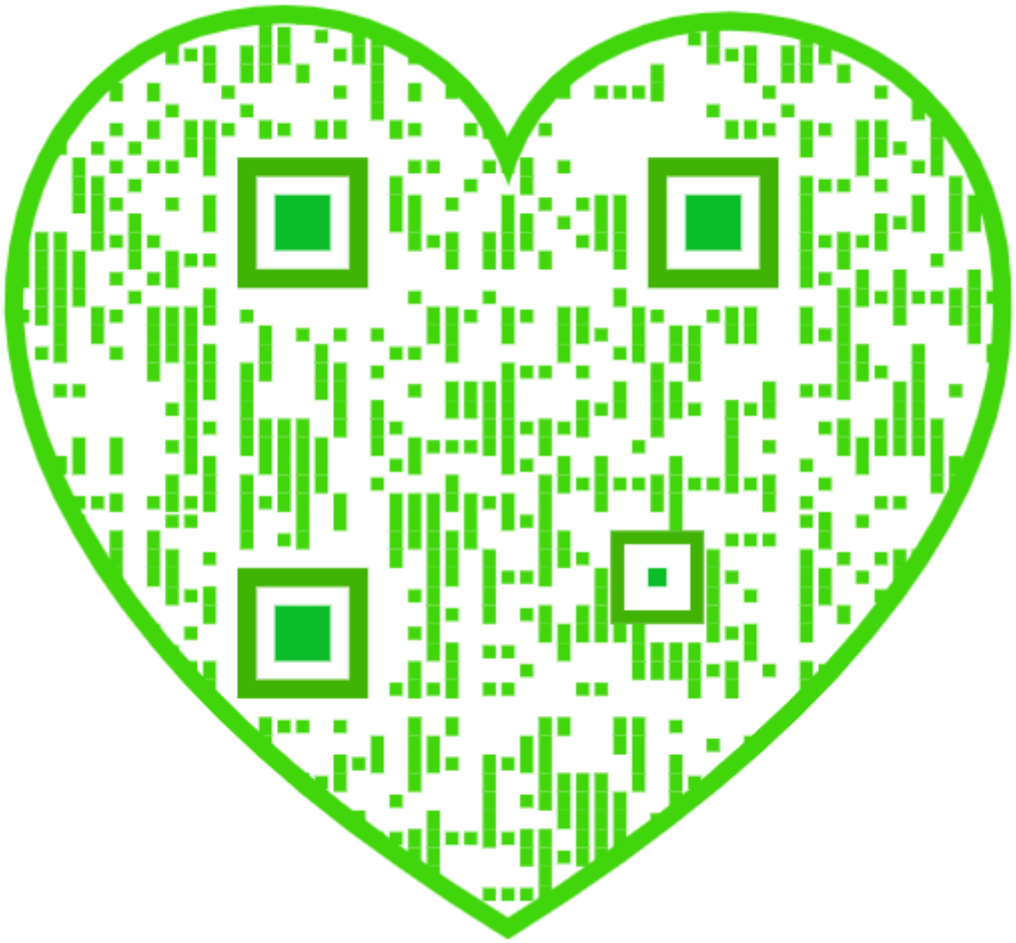

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THE ARCHITECT AND ENGINEER

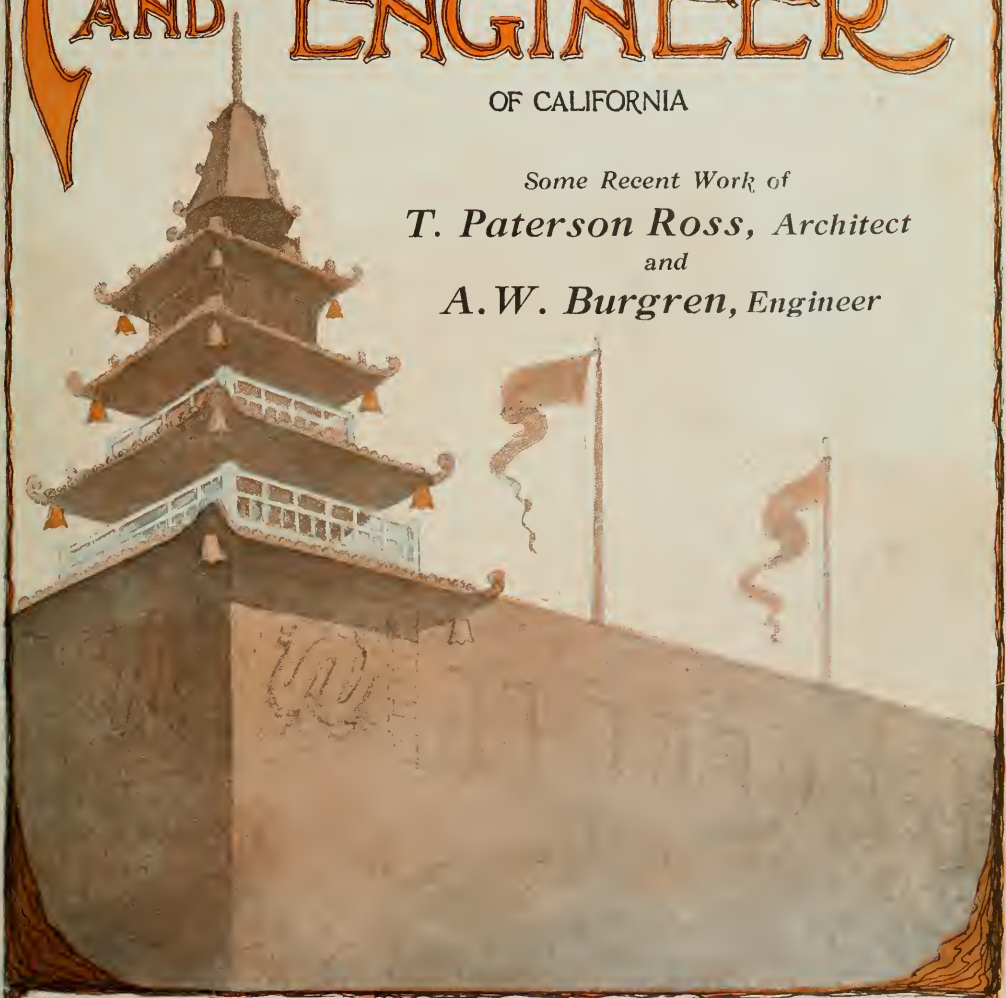
OF CALIFORNIA

Some Recent Work of

***T. Paterson Ross,** Architect*

and

***A. W. Burgren,** Engineer*



November 1912

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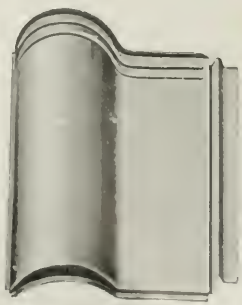

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Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.

Contents for November

	PAGE
Greenwich Terrace Apartments, San Francisco — *Frontispiece*	
Some of the Recent Work of T. Paterson Ross and A. W. Burgren — With Twenty-five Half Tone Plates of Buildings Designed by this Firm	47
Making Our Cities More Beautiful — *R. S. Peabody, Harvard University*	67
Mission Furniture Requires Special Wall Decoration	72
Two Interesting Department Store Buildings — *C. W. Dickey, Architect*	73
Early Christian Art—II — *F. W. Fitzpatrick*	79
Oakland's Method of Selecting a Supervising Architect is Criticised	81
The Evolution of the School Desk — *C. C. McNeill*	83
The Livable Home — *Mrs H. T. MacVean*	85
The Decoration of the Home — *Leon Caryl Brockway*	86
Reinforced Concrete Arches	90
The Strength of Corrugated Iron — *H. W. Force*	96
Sand Foundations for High Buildings	98
What is a Bungalow?	100
Making and Laying of Composition Flooring — *Robert P. Skinner*	103
Architects and Their Services — *D. Knickerbacker Boyd*	107
Contractors' Associations—Uses and Abuses — *Wm. E. Hague*	108
Among the Architects	111
Editorial	114
State, County, and Municipal Engineering	116
Heating and Lighting	122
By the Way	126

(Index to Advertisements, page 8)

Frontispiece,
The Architect and Engineer of California,
November, 1912.

GREENWICH TERRACE APARTMENTS
T. Paterson Ross, Architect. A. W. Burgren, Engineer

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THE
Architect and Engineer
Of California
Pacific Coast States

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VOL. XXXI. NOVEMBER, 1912. No. 1.

Some of the Recent Work of T. Paterson Ross, Architect, and A. W. Burgren, Engineer

THIS number of The Architect and Engineer is devoted largely to the work of Architect T. Paterson Ross and Engineer A. W. Burgren, of San Francisco.

The illustrations shown are of buildings designed and erected by this firm within the last five years, except in one or two instances. The design of the chapel at Cypress Lawn Cemetery was made by Mr. Ross in 1892. It is a splendid example of his early work, and shows the Gothic feeling throughout.

One of the most interesting buildings designed by Messrs. Ross & Burgren is the group of fifteen hillside residences now being erected on the southwest corner of Leavenworth and Greenwich streets, San Francisco. It is the first time a San Francisco architect has attempted to build pretentiously on the steep grades overlooking the bay. The problem was no simple one, since the architects were obliged to confine themselves to limited space and at the same time obtain an outlook, not only for one but for all of the sixteen houses comprising the one great building. The structure covers a lot 137 x 172 feet with a central court 60 x 85 feet. Each residence has three frontages, the grade making it necessary to build the houses on terraces so that the roof of the lower house forms a garden for the house above it. The building is designed in the Spanish style of architecture and when completed will be a bright spot to the grey hills overlooking city and bay. The exterior treatment will be white Portland cement with red tile roof and brilliant flower boxes beneath each window. The court will be laid out with concrete walks, sunken gardens and fountains. The building will contain an assembly hall for entertainment purposes, also social and billiard rooms where the members of the different families occupying the fifteen houses may assemble for social intercourse and pleasure.

Of the large commercial buildings designed by this firm the more important ones are the Clunie store and office building, at California and Montgomery streets, the Peterson building, on Market street, Zellerbach warehouse, and the Shiels Estate building, at Stockton and O'Farrell streets. These are all steel frame structures designed to be proof against fire and earthquake. Messrs. Ross & Burgren have also planned many of the large family hotels and apartment houses erected in San Francisco since the fire, one of the most recent buildings of this class being for the Joseph Estate, a seven-story structure on Mason streets, near O'Farrell, and the Magner hotel on the Embarcardero.

A design of some interest is the two-story and basement public garage, an elevation of which is shown on another page. This building is to be erected on Geary street, near Jones, and will be of reinforced concrete with exterior treatment of glazed brick and terra cotta. It will be 75 x135 feet and will have accommodations for 150 mach'nes.

Site of the Greenwich Apartments, San Francisco
This Seemingly Inaccessible Hillside Lot is Being Transformed into Homelike Residence Apartments

Plan Greenwich Apartments
Architect H. W. Burgren Engineer
San General Contractors

Hotel for Joseph Mogner Now Under Construction, San Francisco
T. Peterson Ross, Architect. A. W. Burgren, Engineer
Plumbing Fixtures by the R. W. Kinney Co.

Berg Hotel, San Francisco
J. Paterson Ross, Architect. A. B. Burgren, Engineer

Chunie Building, San Francisco
T. Paterson Ross, Architect. A. W. Burgren, Engineer

Shiels Estate Building, San Francisco *T. Paterson Ross, Architect. A. W. Burgren, Engineer*

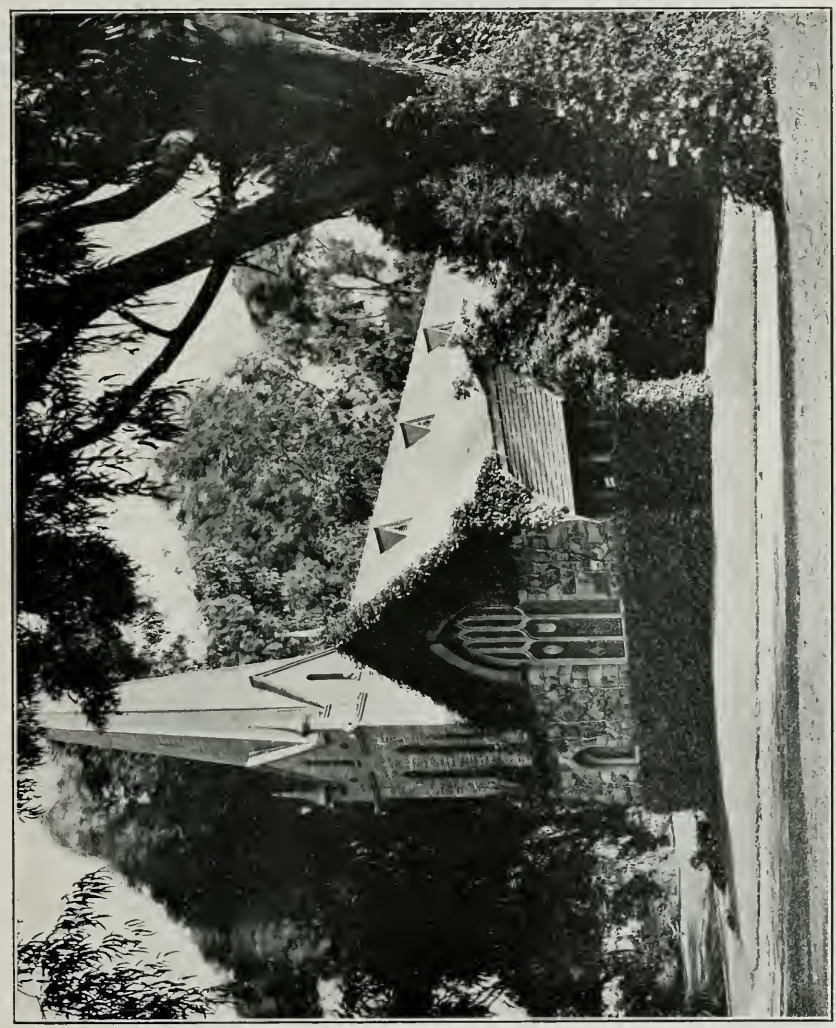


Photo by Walter Scott

Chapel, Cypress Lawn Cemetery, San Francisco

T. Paterson Ross, Architect

Baldwin Hotel, San Francisco
[illegible] Reid, Architect. T. W. Bergen, Engineer.
Holm & Son, Builders.

Scottish Rite Temple, San Francisco

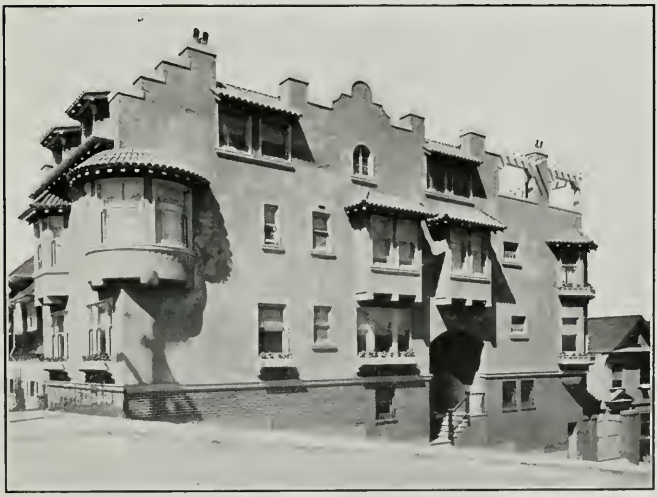
T. Paterson Ross, Architect — A. W. Burgren, Engineer

Chatham Apartments, San Francisco

T. Paterson Ross, Architect — A. W. Burgren, Engineer

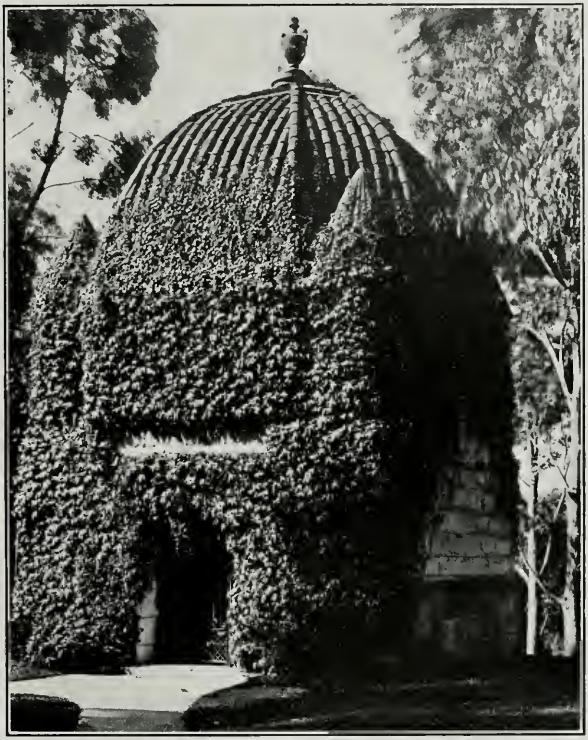
Sing Fat Building As it Appears by Day and by Night Chinatown, San Francisco
Lawrence Ross, Architect. J. W. Burgren, Engineer

Zellerbach Warehouse, San Francisco



Captain Woodside Flats, San Francisco. T. Paterson Ross, Architect. A. W. Burgren, Engineer

Entrance Gates to Forest Lawn Cemetery, Los Angeles
T. Paterson Ross, Architect



Columbarium, Cypress Lawn Cemetery, San Francisco
T. Paterson Ross, Architect

Elevation for Public Garage, San Francisco

Mr. R. E. Campbell, Carcmont
[illegible] Architect — A. W. Burgren, Engineer

T. Patterson Ross, Architect. House of Mr. H. H. Young, San Francisco. A. W. Burgren, Engineer
Wiring by American Electrical Eng. Co.

Dining Room, House of Mr. H. H. Young, San Francisco

Entrance House of Mr. H. Mundrell, San Francisco
T. Paterson Ross, Architect — J. W. Burgren, Engineer

Staircase in Residence of H. Mundrell, San Francisco
T. Paterson Ross, Architect *A. W. Burgren, Engineer*

Entrance to Dr. Henry Kugelers Residence, San Francisco. Ross & Burgren, Architects. Bronze Standards and all Interior Lighting Fixtures Designed and Manufactured by Adams & Hollopeter, San Francisco

House of Dr. H. Kugeler, San Francisco
T. Paterson Ross, Architect. A. W. Burgren, Engineer

House of Architect T. Paterson Ross, San Francisco

House of T. Paterson Ross, San Francisco

Making Our Cities More Beautiful*

By R. S. PEABODY

I.

WITH free opportunity it would seem but rational for any community to prepare for tomorrow as well as today; to remember future generations; to practice foresight; and where could a nation's intelligence be exerted to greater profit than in moulding its cities? That combination and coordination and cooperation which make a city, also make it a model for town and village in most lines of material and intellectual advance. All this moreover is retroactive for "people are in a large way what the city makes them." How important then is a good and beautiful arrangement for a city. "It pays not only in the current coin of commerce but in the refinement, the cheerfulness, the happiness, the outlook on life of the poorest citizen."

But as a rule a city is not planned. Most cities just grow. Broadway, the most important street in the plan of the most important city in America, certainly was never planned. Originally a country road extending at Wall street beyond the city fortifications its natural course would have been, one would have said, into the Bowery and the Boston Road. Some accident turned it northwards instead, and now, not only is it a serviceable and convenient street, but this accident creates the greatest element of picturesqueness in the stupid and mechanical plan of New York City. When it intersects the regular network of streets there is a constant succession of effective sites. One of these sites is occupied by the Herald Building and one by the Times Building, and there are many others from Union Square to Columbus Circle. All this happened without intention; but now comes Mr. Marshall with a carefully studied plan for a crescent shaped street making a much needed thoroughfare between the New York Central and Pennsylvania railroad stations, avoiding the great buildings, creating great values, and adding sites of great beauty to that portion of the city. Here then is one case of accident and one of design. The latter if carried out would give equally good results with the former fortuitous combination. Many towns and villages show unexpected results which are, like Broadway, fortunate; but they cannot be confidently counted upon. They should be considered rather as examples to rival when new work is to be done. There are undoubtedly many happy accidents and sometimes their accidental character gives them a special charm, but we can not be uniformly lucky.

Many a town started on the open prairie does offer opportunity for a scientific town plan, but these inviting chances are lost because of the scant resources at hand, because of the ignorance of the promoters, or from a desire to make a quick turn of capital. Hence we find so many of them laid out in uniform rectangles that stupidly disregard valleys or summits or natural contours. But at times real chances for town and city planning do occur. When Washington, with L'Enfant's help, planned and founded the city of Washington in unoccupied country, or when in our day the country capital of Baguio is created by a paternal United States Government spending Filipino taxes wisely, real opportunities again occurred. Even today the rivalry of Melbourne and Sydney is bringing into the Australian world a new city seventy miles from the sea. It is to be equipped with a Parliament House and public buildings, a theater, a university, an art gallery and a library.

*Notes for three lectures on Municipal Improvements, delivered before the School of Architecture of Harvard University.

But a residential and governmental city like these makes possible an undivided attention to beauty and stateliness. It differs from the ordinary city where men gather primarily for trade and manufacturing and for business intercourse, and where residence merely follows this trade, and it is plain that the world very seldom offers opportunity for a new plan of a great city where trade creates riches and riches luxury. But though entirely new cities are rare, yet renewed cities are far from rare. New quarters, new boulevards on the sites of fortifications or created by ruthless cutting through ancient blocks, all these may and in fact do offer live questions daily. Most new work must arise from chance occasions. Often a town may be improved. It is but seldom that opportunity comes to a community or an individual to plan a town. Hence the town planner must with us generally be an opportunist ready to act when the chance offers.

The World's Fair at Chicago awakened the American public if not to general civic improvement at least to a lively interest in effective monumental architecture. Already many Americans had traveled widely and many recognized the beauty of individual buildings; but at Chicago our whole people saw and many of them saw for the first time how splendid could be the effects gained by the intelligent grouping of noble architecture. The Chicago exhibition was followed by those at Buffalo and St. Louis and Norfolk. Now an interest in monumental architecture has seized the whole country until towns and cities on all sides are talking city plan and civic center. In Philadelphia last year was held the National Conference on City Planning. There was a vast exhibition of designs. You could count sixty American and forty foreign plans for thoroughgoing city improvements besides the designs for numberless town centers and civic groups. Recent congresses in London and Berlin were even more extensive. These exhibitions made it plain to all that the Germans have beyond any question been the pioneers and the leaders in these modern studies. Commercial cities like Dusseldorf, Mannheim, Frankfort, Cologne, Wiesbaden and Stuttgart are vying with one another to make their surroundings serviceable, orderly and beautiful, and to increase the happiness, health and well-being of their people. In Germany also more than elsewhere this city planning is done by experts. Town planning has there become a science and is treated as such.

Accepting then the fact that these studies have seized upon the public mind and are worth while we next ask what is this "City Plan" which has so captivated the popular fancy, and what meaning has it? Mr. Brunner very aptly answers this question by saying

"WHAT CITY PLANNING DOES NOT MEAN.

"It does not mean the creation of a civic center and grouping public buildings;

"It does not mean the arrangement of streets and boulevards, nor perfecting the system of circulation and traffic;

"It does not mean the planting, the location of fountains and statues, nor the creation of great vistas;

"It does not mean the formation of a park system with its connecting parkways and small city squares;

"It does not mean the treatment of the water-front, nor the solution of the railway problem with its arches, tunnels and terminals;

"It does not mean the suburban development nor the creation of garden cities;

"It does not mean the location of school houses or playgrounds, either for children or grown-ups;

"It does not mean the method of bonding the cost of the improvements —the law of excess condemnation—the legislation required;

"It means all of them considered together, the business side of city planning not being neglected, and I believe the most practical result to be attained is not the beauty of the city, but the consequent elevation of the standard of citizenship."

In fact we rapidly discover on investigation that city planning like other things has various ramifications.

It may mean little but humble municipal housecleaning and good civic housekeeping in a city already built. It may mean the designing for better opportunities for trade and commerce or for the housing of the poor; and all this in turn may lead to additions to or changes in such a city, or to the designing of a quarter of the city, or the establishment of a civic center, or finally on rare occasions to the planning of an entire town.

The general principles that underlie a city plan evidently depend upon what the people do and how they live. From this will grow first and foremost a plan to make the town convenient for business; secondly, it must be fit for residence and healthy; and finally beautiful. To make commerce easy we must have facilities for local and foreign transportation, permitting a ready transaction of business and hence prosperity. For this the essentials are railroads, docks and delivery roads. To make the city healthy and agreeable there must be economical and healthy homes. Finally, as the ultimate flower and result of what has gone before, there should be such a disposition of the physical city as will make it a fit and beautiful background for city life; the stage setting before which the life of the city is played.

The first need then is to make commerce easy by proper railroad and steamship connections with the rest of the world by land and sea. The docks must have piers long enough for great vessels and sheds large enough for the quick shifting of cargoes. In most foreign ports the docks are excavated in low land and are provided with tidal gates. The ideal dock is one where the tide has no exaggerated rise and fall and where therefore no gates are needed to control it; where the sheds are so large that the ingoing cargoes may be laid out in proper sequence; and where the railroads and teaming road reach all parts of the dock. Moreover, it should be in close proximity to store houses and factories. Indeed, the ideal dock on our coast is of this description and can be found and examined at the Bush Terminals in Brooklyn.

At a terminal or transhipment city besides the main entering railroads some method of intercommunication between them is also essential. This is accomplished either by a circuit railroad as in some cities, or by lighters on the water as in New York, or by a combination of the two. Too often this machinery for the distribution of merchandise is in the hands of large railroads or corporations who can crowd out the competition of other roads or control whole sections of country, but in practically every modern seaboard city that is keeping up with the march of improvement the machinery of the port at any rate is in the control of the public so that all commerce by land or sea may have a fair chance for the delivery and transhipment of goods.

Connected with the railroads must be good classification yards well outside of the city for sorting the arriving cars so that they may be sent in detail to the various different quarters of the city, and good delivery

yards in these various quarters for delivering the goods from the cars for distribution through the city by teams and trucks.

The goods having reached the delivery yards by these varied means there is next needed a set of distributary streets for convenient carting. These must be radial roads in the main with occasional encircling circuit roads and of course their use soon extends from the distribution of merchandise to the intercommunication of the inhabitants themselves.

M. Henard of Paris has made interesting studies of the main thoroughfares or system of circulation in various cities. He points out that a tree but for distributing causes would be perfectly regular. It would have a straight trunk and a symmetrical bouquet of boughs—but shade or wind or lack of food often distorts it. It may have all the more character for the changes that come from such accidents. M. Henard in making his theoretic schemes has reversed the process of nature, and from the more or less tortuous and irregular facts has extracted the ideal theory that governs the plans of the different cities that he illustrates.

He shows how Moscow centers in and radiates from the Kremlin, the citadel of political, religious and military authority in Russia.

In Berlin fourteen great roads connected by a circle radiate from the seat of this military government and lend themselves to effective and economical expansion of the city on all sides—an expansion which is in vigorous progress.

In London there are three principal civic centers: Trafalgar Square, the Bank and the Elephant and Castle. From the triangle thus bounded sixteen radial routes diverge. These, as in Berlin, lend themselves to city expansion, but London is deficient in circular boulevards, and the Parliamentary Commissions constantly endeavor to remedy this need.

Paris, on the other hand, has three circular boulevards, but is deficient in continuous radial avenues. Its great centers, the Arch of Triumph and the Place de la Nation, symbolize grandly military glory and the triumph of the Republic, but they serve no important currents of circulation. A study of these theoretic scheme-sketches shows how important it might be to a growing city to establish a large theoretic plan for its streets.

After commerce is established and prosperous by means of ports, railroad terminals and distributing thoroughfares, the next problem for consideration is found in economical and healthy housing and in that civic housekeeping which keeps all the city conveniences in the best of order. As time goes on our municipalities may concern themselves to see that the citizens of all classes are properly housed. Many see in this the chief and main end to be reached by city planning. Cities might create special quarters for residence or special quarters for different classes of residence. At present our laws are merely restrictive and relate to the height of buildings, the area of land covered by buildings, prohibition of obnoxious occupation, etc. But if the housing problem has had comparatively little attention in most of our cities yet a great deal of energy has been usefully employed in the improvement of our cities by good civic housekeeping. Most of the reports on town planning so common today and much of what was shown in recent exhibitions lay most stress on such work. It is comparatively easy and inexpensive and it can work wonders. The main test is "Look ahead." Good civic housekeeping means close attention to work under the following heads:

Parks and playgrounds are the usual and well understood means of improving the surroundings of a town.

Provisions for water, gas, electricity and sewers are almost universal. Paved streets and sidewalks perhaps are less so. Then come subjects all of which tend to make living conditions better and more wholesome. Such as—

Tree planting for shade and the care of old trees perhaps in charge of a commission.

Neater systems of electric wires and poles, perhaps by carrying on one pole street lights, street names, letter box and fire box. Still better an enforced placing underground of a certain fair distance of conduit each year and the carrying of poles and wires through alleys where possible.

Reduction of the objects on the sidewalks, such as showcases, clocks, advertisements, etc.

Establishment of public comfort stations, transfer stations, drinking fountains, waste cans, control of advertisements.

Establishment of building lines, of a percentage of lot areas that can be covered without congestion, and the creation of manufacturing and residence sections.

Electricity on railroads and abatement of smoke; abolishment of grade crossings.

When business has been placed on firm foundations and in prosperous courses and when housing is healthy and comfortable, then and as the finishing touch to more material things comes in with prosperity attention to the beautiful. We all know that if the city is prosperous and convenient and healthy there is sure to be that sort of beauty that fitness inevitably produces. But the soul and the imagination demand something more, and the final object of our studies—an object that we can well have in view through all the early stages of city growth—is to produce this something. Were our cities perfect works of art one would find a pleasing picture wherever he turned, whether towards the great church, the public building, the monument, or simply down the street. On every hand would be agreeable impressions and a pleasing background for the life of the city. When the city is old and picturesque there is still an added interest, for "a beautiful old town represents an enormous artistic capital which pays ceaseless revenue in the form of grandiose or picturesque impressions." All that is old and beautiful should be, from its very rarity, a thousand times more precious to us than to dwellers in an older country. Indeed the history and social character of a town deserve every consideration. When we plan our city or its civic center and when the design can be controlled, it should continue and enforce the character which stamps the city as different from its neighbors. In making such designs, moreover, not only the relations of buildings in plan but their height relative to the width of squares and streets has artistic importance. In designing the various World's Fairs the relation of the height of the surrounding buildings to the width of courts has been a vital feature. The Senate and House buildings at Washington, beautiful in themselves, would make a far more effective scene if nearer together. In Paris the Place de la Concorde was always large compared to the beautiful buildings that surround it, and now that the Tuileries are destroyed and the Court of the Louvre is opened up one is lost in the vast expanse and looks vainly for the enclosing frame.

But after all the most striking features of a civic plan are the civic centers. They are the focal points in the plan, the high lights of the picture, the chief objects of interest, the most obvious means of gaining effect. It was inevitable that in the civic exhibitions the visionary designs for civic centers should compel attention. Town after town has paid large sums for exquisite drawings of more or less problematic schemes involving

showy architecture at a civic center. These overshadow those dull and dry details which are the source of vitality and from which alone can come the resources for embellishment. Just as a plant must have its root and stalk and leaves before the flower graces it to which all the rest lend strength and sustenance, so the business plan is the fundamental need in a city plan. But the civic center, though but a small part of a complete city plan, is as important as the flower to the plant. It is the final culmination of the city plan. These focal points are what we remember about a town, just as the pictures of them engross us at the exhibitions.

There is, however, nothing very complicated about the designing of a civic center. It is a charming problem, but comparatively straightforward, even when vast like the Place de la Concorde and the other Parisian centers, or like the Courts of the various World's Fairs which it might easily resemble. It involves only the skill for which the whole training of a good architect prepares him. Such centers can be better or worse. They can mar or give charm to the whole prospect, but the less inviting though necessary problems of town planning are infinitely more complicated and difficult. The civic center though vitally important is only a fractional part of a good city plan and is generally a straightforward simple architectural problem.

* * *

Mission Furniture Requires Special Wall Decoration

IN preparing the walls of a room which will be furnished in mission furniture, some of the art-nouveau papers can be used, but as there are several flagrant monstrosities among the new papers, they must be chosen with care. Suitability, not novelty, is what the decorator's customer will most lastingly appreciate; so do not be impressed by the salesman telling you that a certain paper "takes well." You may then rest assured that it is a bad paper, because the majority of people have not good taste, and it will be decidedly to your interest if you can inculcate good taste in those whom you yourself serve, since if you once accomplish this they will never submit to the services of anyone other than you.

Some of the leather papers in solid color or two-toned effect are very beautiful for a large, handsomely furnished room. These are best used with a tiny little border that is sold to go with them to outline the panels. This treatment is very rich and dignified, but requires modern furniture in the room to be correct. Cheap light-oak furniture or painted chairs would be grotesque with such a background. Plain burlap as a base, surmounted by plain felt above, is an old standby for a room that women never tire of, especially if the room be a dining-room, broken by a broad rail on which decorative pottery has been placed.

There are any number of beautiful little colonial designs suitable for dining-rooms. They are dainty in design and appeal to most of us as being eminently suitable to their surroundings.

Plain papers are always best for living-rooms, as here, of all places, we like to have our favorite pictures about us. Corn color is a very satisfactory tone for the walls, and goes with either stained woodwork or ivory paint. Many of the two-toned papers are practically as good a background for pictures as the plain ones, and are well adapted for living-rooms, says the Practical Decorator. Many people divide the walls and have a plain base and a frisky flowered paper for the upper walls. Although this looks bright and cheerful, it is not satisfactory to live with. As these rooms are used in the day-time as well as in the evening, papers must be considered by daylight and artificial light, and a color must be selected that will be pleasing at both times.

Capwell Department Store Building, Oakland
C. W. Dickey, Architect

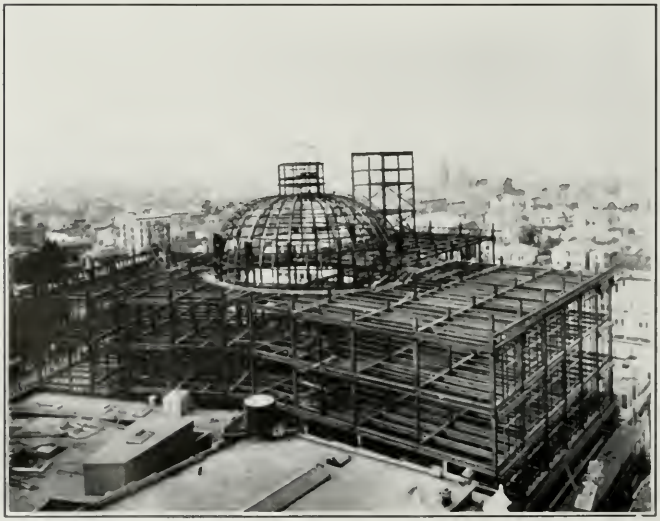
Two Interesting Department Store Buildings

ARCHITECT C. W. Dickey of Oakland has supplied the following condensed data covering the important features of two interesting department stores designed by him—the Kahn and Capwell buildings—together with perspectives by the architect and photographs of the completed work. Three different studies of the Kahn building are shown, including the original design and the plan that was finally adopted. To quote Mr. Dickey:

The Kahn building is a four story and basement, class "A" department store with foundations and steel work strong enough for two additional stories. There is a great rotunda in the center crowned with a glass dome, the top of which will be 148 feet above the sidewalk. The dome is 75x95 feet. A tank tower for the sprinkler system will be 165 feet above the sidewalk, or higher than any building in Oakland except the City Hall. The exterior will be of gray pressed brick and terra cotta inlaid with Italian Pavanasso marble. The lot contains 38,000 square feet fronting on three streets—Broadway, San Pablo avenue and 16th street. There are two entrances on Broadway, two entrances on San Pablo avenue and one entrance on 16th street. Three passenger elevators, one freight elevator, two dumb waiters, two sidewalk elevators and a spiral package conveyor will facilitate quick transportation to any part of the building. The building will cost $650,000, exclusive of store fixtures, which will be of mahogany and will cost about $100,000 additional. The Arcade show windows will be similar to the Emporium and will face Broadway and San Pablo avenue. There will be a Marquise across the entire width of 16th street for protection in handling freight, which will be brought in on that street.

The design for this building has developed through a number of schemes. One of these schemes called for a 12-story building with stores

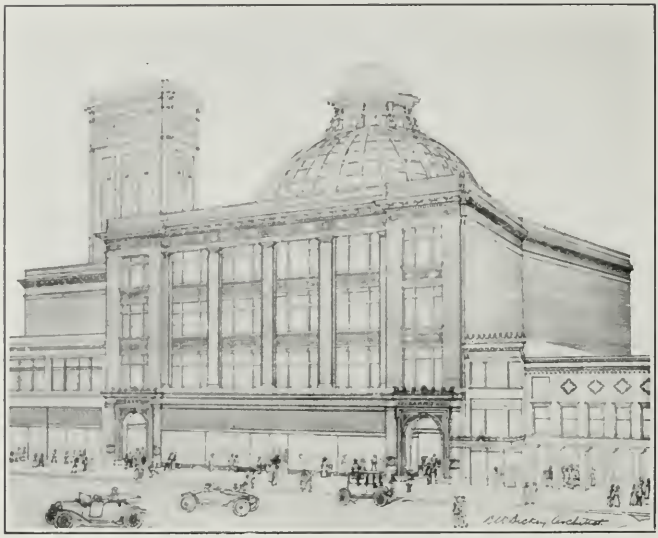
Roof Garden, Capwell Department Store, Oakland
C. W. Dickey, Architect



Steel Frame, Kahn Building, Oakland
C. W. Dickey, Architect

The Kahn Department Store Building, As Originally Planned
C. W. Dickey, Architect

in the lower stories and an office building above, and with a 30-foot arcade running through from Broadway to San Pablo avenue at the southerly side of the building. The arcade would have been very desirable as it would have constituted an extension of 15th street, which does not cut through the block, but after considering the matter for nearly a year, during which time the project was financed, the owner decided it would be impracticable to sacrifice so large an area on the first floor and hence abandoned the arcade idea, but will still retain a broad aisle which will serve the original purpose to some extent. In giving up the arcade feature we were left without any restrictions, such as lighting of arcade, in the matter of planning the lighting of the interior of the store, and owing to the peculiar shape of the lot it seemed best to introduce a rotunda in the center of the building to light that portion of the building. This rotunda will not only serve to give perfect lighting throughout the store, but will form a very attratcive and imposing feature which will serve to impress upon



Kahn Building As It Will Appear When Completed
C. H. Dickey, Architect

patrons the magnitude of the store. The treatment of this arcade will consist of rectangular piers in the first story; columns of the Corinthian order, extending through second and third stories, with a light iron balustrade at third floor line and arches in the fourth story at the dome base. The dome, itself, will be largely of glass. This dome, elliptical in form, is, as far as I have been able to learn, the largest elliptical dome in existence. The steel frame of this dome was extremely difficult to lay out and those who did the work deserve great credit for same. The tank tower is to be enclosed and used as an advertising tower with the word "Kahn's" in huge illuminated letters on each of the four sides.

The exterior of the Capwell building is of white glazed terra cotta furnished by N. Clark & Son. The building is a class "C" structure, with steel skeleton frame and wood joist, and is fitted throughout with automatic sprinklers. There are three passenger elevators, a freight elevator, dumb waiter, two sidewalk elevators and a spiral chute; also an escalator extending from the first floor to the second floor, which is the only escalator in the Bay region, and is capable of handling 100 passengers per minute with perfect safety.

The interior wood work and floor fixtures are of mahogany inlaid with ebony and satin wood. The large, bright and airy basement is used as a sales department. The main feature of the building is the roof garden, consisting of a closed garden with pergolas on three sides over which vines trail and with paved walks in the open yard surrounding flower beds, which give the appearance of a garden on terra firma. These beds con-

tain soil about 12 inches deep, which has proved sufficient for the vegetation. In the center of the court is a cement fountain with gold fish in the basin. Spots of color are introduced by means of bright red Italian oil jars placed on each side of each entrance to the court. On one side of this garden is a broad elevator and stair hall; on another side is the large children's play room and a lunch and rest room for employees; on the third side is a beautiful cafe with lattice work on walls and ceiling intertwined with grape vines and the lighting is done by alabaster bowls suspended by chains from the ceiling. The kitchen department is one of the best equipped in the City of Oakland.

The structures surrounding the garden occupy about one-half the roof space in the center of building, the remaining roof space is open with boxes of geraniums and sweet peas and boxed trees. There is an elevated promenade around three sides of the building from which a view can be had of the surrounding country.

Arcade in Kahn Department Store, Oakland
C. W. Dickey, Architect

Office Building for Surety Mortgage & Building Company, Oakland
C. H. Dickey, Architect

Early Christian Art

By F. W. FITZPATRICK

11—Concluded from the October Architect and Engineer.

AFTER long suffering the peoples of southern Europe threw off the hated yoke of the "true believer." Still all southern Europe was inoculated with the learning, the art of the Mahomedan.

Add this influence to that already noted, the Byzantine, and you will have some idea of the leaning there was toward Orientalism.

Then Christendom, encouraged by its deliverance from the scourge of Islamism, carried its advantage still further, even into the land of the enemy. It became the invader, determined to wrest the Holy Sepulcher from the Saracen—together with whatever portable belongings the latter might not be able to hold onto.

The Crusaders brought back not only plunder, but the habits, the luxuriousness of their old foes. They were captivated by all they had seen in the Orient, they employed artists from the East to build their castles, their great public buildings, aye, even their sacred edifices. And thus was added another mesh to the already stout lashings that held the artistic world bounden to the Orient.

An influence that the men of the fifteenth century believed they had forever outgrown when they again began to copy in season and out of it, and with little skill, the stately models of classic Greece, or the florid creations of imperial Rome; an influence so potent, however, that even we of far-off America and in this late generation, still feel its thralldom.

This oriental influence is all pervading. We used to think the Gothic arch was inspired by the grand o'er-arching and o'er-lapping of trees, then by the interlacing of arches, but we find that long before the Twelfth century pointed arches were used in the Orient and even in Europe back in 500 and 600 A. D. In the Pyramid of Gizeh stones were so built abutting diagonally against each other and forming a rude arch, the section of a polygon, also in the pyramid of Meroe and in the gateway of Assos. The early Byzantine artists may have known of it, the late ones certainly had their attention drawn to it by what they observed in Mohamedan art.

The Crusaders were very naturally influenced by what they saw of Mohamedan art, its grace and refinement could not help but influence even the rude warriors, the major part of those armies that, nevertheless, also numbered some artists and many skilled artisans. The moment they returned to their own lands we note their adoption of certain "barbaric" forms, notably the graceful so-called Moorish pointed arch and undoubtedly that very ogival form was the real inspiration, the beginning of the "Gothic" architecture the first crude examples of which began to appear in the twelfth century.

The church of Sancta Maria del Fiore, Florence, marks the beginning of that influence. We see where its architect, Arnolfo de Cambia (1298) drew his inspirations. In the main he kept in mind St. Sophia's, but elongated a nave much resembling the basilican form of building, and drew his details of arches and ornamentation somewhat hesitantly along ogival lines—the recent Mohamedan importation. That church still stands one of the noblest specimens of ecclesiastical architecture and in size it is only second to St. Peters at Rome. It is 454 feet long by 334 feet across its transepts or arms of the cross and its dome rises 387 feet in the air.

St. Vitalis Church at Ravenna shows the Byzantine influence but tempered with the classicism of Rome. Its octagonal form and the severity of its lines indicate almost a renaissance of the purer Roman art. The church was built in the sixth century.

The Cathedral at Pisa shows a still greater leaning to early Roman forms, the pure bassilican simplicity, a square parallelogramic structure, but its details, its superposed stories of facade, its general character of decoration all indicate the powerful influence of the Byzantine art.

That church undoubtedly served as a model to the ecclesiastical architects of all Europe at that time. You see its adaptation everywhere. The cathedral of Milan is but a highly ornamented example of that influence.

The Baptistry at Pisa (1152) shows how strong the Byzantine influence really was and it yields but little fealty to the Roman spirit that withal, you can see peeping out of it here and there. Its dome of 100 feet in diameter and 102 high is a fine example of the doubled brick cylindrical walled construction that soon thereafter became so common.

An outgrowth of all this was the Romanesque, a certain boldness of parts and delicacy of ornament that made the style perhaps more romantic than "Romanesque." Note the beautiful examples in Germany at Worms and at Mayence.

The artists of that time indulged in certain refinements of art that their predecessors had not even thought of. For instance, in some of the later revivals of Basilican structures we find the long rows of columns being drawn nearer together toward the sanctuary, and the lines of their cornices at a slant in the same direction, made by shortening the columns, all done with a certain scientific precision in an effort to accentuate the perspective, increase the apparent length of the nave. We see them also getting away from the old Oriental ideas of conventionalizing all natural forms and never really depicting an animal, for there are lizards and birds and wild and tame things of all kinds boldly carved in their capitals, ornamenting their columns and supporting bases.

By the sixteenth century we find a complete revival of the classic spirit in church architecture, though it had not entirely eliminated and never will eliminate that Byzantine, Oriental flavor. Bramante, St. Gallo and the rest of them strove against that influence but even in St. Peter's at Rome (1506) you'll see it cropping out at odd and most unexpected places.

Even to the far north that Oriental spirit, of Byzantine transmission, worked its way. The Normans fell under its sway. True they worked in and wild and tame things of all kinds boldly carved in their capitals, ormaterials with which they had to work, but the influence was there withal and we are upon the wrong trail when we seek to trace Norman art back through varying evolutions to the old Saxon.

All these "blends," so they may be termed, went to the making up of the stately and majestic Gothic, those dreamland creations that render the cathedrals of that period the most marvelously beautiful, mystic, weird, exalted and exalting, soul-stirring structures the world has ever seen. To the classic, the Saxon the other influences may be attributed this or that form, such and such detail, but to the Byzantine, the Oriental influence, must be given credit for the Catholicity of the whole, the freedom from restraint, the exuberance and spontaniety of expression, the daintiness of touch, the romance and real charm of it all. No Frankish nor Norman nor Latin artist could conceive and design such masterpieces had he not had the wealth and beauty and enslaving witchery of Oriental art, with which, to use the words of the poet, "to saturate his soul!"

Oakland's Method of Selecting a Supervising Architect is Criticised

MESSRS. Edgar A. Mathews and William Mooser, comprising a special committee appointed by San Francisco Chapter of the American Institute of Architects, to investigate the award of architectural work for the city of Oakland, has submitted a report criticising the methods followed by the municipal authorities in naming the supervising architect and his associates. The report which has been adopted by the chapter, is given herewith in full:

"The thought uppermost in mind is that the aim, purpose and intention of the code of ethics and schedule of fees, as adopted by the American Institute of Architects, is to safeguard the interests of the architect professionally and to prepare a way to future advancement and greater growth. It certainly is not the aim of the Institute to endorse a method or policy whereby, in public work, a supervising architect should be selected by an official or set of public men whose training unfits them for this arrogating power. From discussions heretofore, among architect members of the Institute, there is nothing by which we could conclude that the designer of a building, whether public or private, should be relegated to a secondary position and placed under undignified and unnecessary restraint, and his plans made to conform to the wishes of another in the same profession, thus giving this latter judge such arbitrary power; if this power did not emanate from great breadth of mind it would lead to the destruction of individualism, which is so necessary to progress, and might often place the original designer in an embarrassing and undignified position financially.

"In the Oakland case the dominating influence of a New York office might naturally be against local tendencies in design; and, may one ask, what would happen to an ordinary designer in this case, if his plans did not please the New York firm? Furthermore, if the designer's plans were good or fairly so, how can one supervising architect place himself in the shoes of another architect and always be fair? Extra restraint means to the trained man extra trouble, time and subsequent expense; and certainly the demands upon the modern architect ought to be such that would reduce his expenses to somewhat of a minimum. It makes no difference whether Mr. Donovan's intentions are of the best, we feel that it is a bad precedent for the City of Oakland to establish and it is future trouble we desire to avoid.

"As to the various methods of payment proposed by Mr. Donovan to some architects, we are informed that at first he practically offered only 2½%, subsequently increased it to 3.6%, and suggested that out of this Mr. Hornbostel should be paid for expert services in criticizing plans, etc.; but finally agreeing to pay this proposed fee to Mr. Hornbostel himself. Mr. Donovan is to be paid practically upon a basis of about 7%, he receiving 6% for ordinary services and the City of Oakland paying about 1% additional upon the steel work, heating, ventilating and other engineering problems. Now, as every architect knows, the steel work, heating, ventilating, etc., must conform to the general plans, and those various problems require study upon the part of the original designer, and he should be paid in accordance therewith, and if he is not, then how can the claim be put forward that this method of payment, consisting of 3/5ths of 6%, is in accordance with the regular schedule? The contention must be made that the schedule provides that every architect should be paid for all of his services. We are informed that Mr. Donovan has consulted with a number

of architects, and has finally offered the work in accordance with the above conditions, of 3/5ths of 6%, and some have refused for precisely the above reasons.

"Originally, the segregation of 3/5th portion of a fee was made in case of abandonment or suspension of work, and this part of our schedule should not be used to fit this case or any future similar case. As heretofore stated, the intention of the schedule and code is to safeguard the interest of the individual architect. If we endorse or submit to this method of doing public or private work, it is an unwise precedent to establish, and will involve us in more future trouble than we can dream of. It would place every architect under the dominating influence of another architect, a restraint which no self-respecting man would tolerate, and would create an atmosphere of over-shrewdness and adroitness, consisting of mere barter and trade, and reduce our profession to an undignfied and purely commercial basis.

"In conclusion, we feel that the method followed in the City of Oakland in the selection of a supervising architect and the course pursued in selecting associates and awarding various buildings is objectionable and contrary to the original intentions of the American Institute of Architects in the adoption of their various codes and schedules."

* * *

White Colors Seem to Fit in Best With the New Note of Simplicity in Architecture

SIMULTANEOUSLY with the growing popularity of extremely plain forms of architecture, the use of white colors for the exteriors of detached dwellings has become notably prevalent. In the suburbs of our southern cities white colors predominate, not alone in the adornment of colonial types of houses, but in the decoration of almost every newly-built home, whether the structure be one of wood or concrete. In some suburbs there is now a pronounced line of demarkation between the older dwellings and those of recent construction. In the one section we find numerous tints on both walls and roofs, together with many and various combinations of colors on a single house. In the newer neighborhood we see only white and black, and the suggestion of freshness and cleanliness is delightfully enticing. But while white colors prevail, there is not a rigorous adherence to the colonial type of architecture. It is actually the exception to find any houses at all which are not painted white.

For the outside painting of houses, white lead is a particularly desirable pigment, whether the lead be procured and used already mixed in the form of a good mixed white paint, or whether it be bought pure and mixed by the painter.

It is understood, of course, that a house is not necessarily white because it is painted with white lead, as the lead can be mixed with other colors. In general, however, the lighter the color with which a house is painted, the more durable the paint will be, and the more comfortable the house itself will be, both in winter and summer, white paint having a surprising effect in reflecting the sun's rays in hot weather, and keeping the house behind it cool, as well as in preventing radiation of the heat in winter.

The old impression about white being a troublesome color to keep clean is open to question. Is white actually any more susceptible to dirt and fading than yellow, for instance?—Practical Decorator.

The Evolution of the School Desk

By C. C. McNEILL*

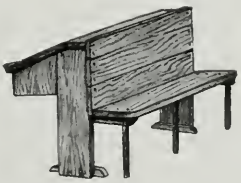
IN no avenue of human endeavor has more progress been made in the last century than in education and the methods of acquiring it. A glance at the pages of history will show that the art of imparting instruction to the youth of the oncoming generation a hundred years and more ago, was as crude as almost everything else they did in the good old days. Aside from a comparatively few noteworthy examples of advanced scholarship the rank and file was expected to be content with the most elementary principles of learning as applied to language, history, mathematics and the sciences.

The desirable qualifications of a teacher only a couple of generations ago consisted principally in his ability to wield "the big stick," preserve decorum in the prison, called the schoolroom, and incidentally impart some knowledge of readin', 'riting', and 'rithmetic from a few well-worn volumes handed down from generation to generation.

The development and improvement of furniture and equipment for the schoolroom has been as marked as that of any other department of public education. The implements and apparatus of the schoolroom in those days were as crude and limited as were the requirements in other directions; a painted board at one end of the room, a good stout hickory in the corner and, perhaps, a cracked globe or a torn map of the world, represented the equipment of the average common or country school of the eighteenth and most of the nineteenth century. Most of our fathers and grandfathers remember this picture well.

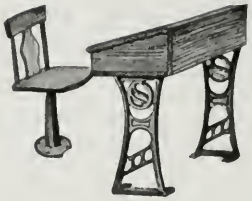
Aside from the high desk and stool representing the throne of "Master," the furniture consisted of hard puncheon benches, made of a slab split from a log, the upper or flat side remaining much as the ax and wedge left it, while four pegs driven into slightly angled holes bored in its under or rounded side constituted its support and formed a seat the ease and comfort of which in nowise detracted from the serious business in hand. A shelf or writing board nailed along one side of the wall to which the pupils repaired for the daily writing lesson, was supposed to complete all that was necessary in the line of equipment.

After the wooden slab the home-made bench must indeed have appeared a luxury. This was constructed of saw-mill boards, nailed together in the semblance of a desk, with a sharply sloping top for writing and with a flat board seat in front for the next pupil in the line; this formed the "Combination Desk and Seat" and was a long step in advance. It had the advantage of a support for the weary back and a rest for the tired arms of the student. They were usually made long enough to accommodate not only one pupil but three or four. Later this was universally reduced to two and the double desk came into vogue and in some sections of the country are still in use, although of modern and comfortable pattern.



About 1850 to 1860 some manufacturers began to recognize the desirability and consequent commercial value of specially designed desks and seats for the schoolroom. The iron standard desk was evolved, some with folding seat and top and some with separate and in-

*Secretary, C. F. Weber & Co., San Francisco and Los Angeles.



dividual seat or chair, independent of the desk and its neighbor. Cast iron standards were made to which were fastened with screws the top or writing board with shelf for books beneath, and a back and seat in which some attempt was made to conform to certain curves and procure more comfort to the pupil and make more endurable the long hours of study. The backs and seats were usually made of slats, generally alternating in light and dark colored woods, to produce a pleasing effect, and allowing more latitude in producing the curves to conform to the body. A little later manufacturers began to glue these strips together and to produce a compound curve in seat and back and to devise mechanical methods for attaching the woods to irons without the cumbersome and expensive aid of many screws, which were continually coming out and permitting the wooden parts to divorce themselves from the irons.

About the same time the "Automatic" desks made their appearance, consisting of an automatically folding seat part, permitting the pupil to rise or be seated without the necessity of getting into the aisle. This principle is preserved to the present day in all up-to-date school desks. Special attention was also paid to producing noiselessly folding seats, thus to minimize the distractions of the schoolroom. Lines of beauty and harmony in style of castings and finish of woods were produced, competition in this line, as in others, forcing manufacturers to vie with each other in producing the perfect desk in utility, comfort and appearance.

Up to about twenty years ago all desks had been constructed on the rigid principle of a table or chair without concern for the varying heights and sizes of the growing children who were to use them. It is true they were made in about six sizes, supposed to accommodate the varying grades and ages, but it was noticed that the bright and forward pupil was often occupying the same size desk that his older, larger and slower classmate was and that while the feet of one swung off the floor in a seat too high for him, the other humped himself with rounded shoulders over a desk too small. These misfits tended to produce all sorts of deformities from astigmatism to curvature of the spine.

Then was evolved the brilliant scheme of producing a desk and seat which would be adjustable to fit the pupil occupying it. A long leap ahead in common-sense construction of school equipment was then and there made to the immediate and decided advantage of the pupil. Desks were made with a range of adjustment of several inches, sufficient, with fewer initial sizes, to accommodate the individual pupil in whatever grade or class he found himself, and this is now considered the only correct principle upon which to seat a schoolroom.

The single desk and seat is almost universally used, thus insuring independence and privacy to the pupil in his work. Different styles are in vogue from the "Combination" desk and seat to the separate adjustable desk and the separate adjustable chair, the latter often having in addition an adjustable back to produce the desired support just where it is needed.

Cast iron desk standards, capable of breakage and with the inevitable "filigree work" as dust-catchers, have long been in use, but now comes the latest triumph of the desk-makers' art in the construction of the Sanitary Steel Standards. Immense popularity has greeted this new departure. Light, strong, unbreakable, chaste in appearance, without angles and crevices for catching and holding dust, with richly finished woods and the plain, durable "gun-metal" finish on standards they are considered by educators, architects, school boards and all who are concerned in the proper furnishing of the room where our children spend so many of their waking hours, to represent the highest degree of perfection in schoolroom seating.

* * *

The Livable Home

By MRS. H. T. MAC VEAN

THE need for livable homes has evolutionized interior home building. The want of necessities, the call for comforts, the need of utilities has practically banished the old rambling, meaningless, foot-weary house, gradually giving way to the modern, comfortable apartment and the home with an identity. Useless waste of space, replaced by convenient recesses, serviceable brackets of shelves, generous drawer space, adjustable tables, cozy chimney corners, built-in during course of construction, affording comforts and contentment to the occupant and profit saving in repairs to the owner—all these little attentions and more—are the order of the day.

Who has not seen the annual and semi-annual parade of the moving van through the city streets. Our families, one after another, are driven from place to place for want of better accommodations, better light, better air, more helpful conveniences and necessary comforts. To the housewife we may well be grateful for our modern conveniences, simplified housekeeping and common sense building of livable homes.

Recognizing the value of woman's knowledge in the interior home, land promoters and architects find in her a consultant most valuable in creating the more attractive, more livable home, for with her aid they realize the possibilities of increasing valuation, quicker sales and greater profits.

Too many comforts have been sacrificed in the scale of dollars and the measuring rod. The call is broadest for the home of individuality, expressing its identity and purpose in charming simplicity.

* * *

Unappreciative

Old Lady: "Why are you hitting that little boy?"

Part Time Students: "His father is on the school board and proposes an addition to our school, so we can go to school all day."

The Decoration of the Home*

By LEON CARYL BROCKWAY, Architect.

EVERY young lady looks forward to the time when she will be the mistress of her own home, and if some inside information I have received is correct, that time is not far distant for some of you. So, of course, you are all interested in your future home, a castle-in-the-air it may be now, but perhaps soon to be a reality.

The castle-in-the-air reference reminds me of the architect who had been talking very eloquently to his client for a full half hour about the beauties of the English, French and Italian architecture that he had seen during his travels who finally said, "And now, Mr. Blank, let us consider the cost of your building. The excavation"—when the client interrupted with, "It's about time you came down to earth."

To come down to earth again, I believe it means much for the efficiency of the future homes of our country that we have these courses in domestic science and domestic art in our public schools, especially where they are as thorough and practical as those presided over by Mrs. Dutton. I am sure no girl coming from her classes will do like the bride I heard of the other day. She called up the butcher for the first time to order some ham. "Do you want the cured kind?" he asked and the bride replied, "Well—er—if it's all the same to you, I would rather have some that had never been ill."

"The planning and decorating of the home," I believe, is my subject, and while the planning of the house is a part of the architect's daily work, I had thought to pass directly to the second part of the subject of decoration and furnishing; for probably only a few of you will have the delightful experience of seeing your new home rise from the foundation stones.—Many will have to take a house as they find it, ready built, and make the most of it. But if a well-planned house is selected and the architect thereof has designed well-proportioned windows and doors and given it pleasing woodwork, we may well feel encouraged and joyfully go to our task of making a house into a home.

William Morris made a wise remark once, and, by the way, this Morris was the one who designed the original Morris chair; he said, "We should have nothing in our houses that we do not know to be useful or feel to be beautiful." That is good enough to remember, so let us write it down as a text.

Someone else has well said that in the furnishing of the home there are three vital things: (1st) Harmony of color; (2nd) Simplicity of arrangement; and, (3rd) Absence of the trivial. Let us write these down also, it will help our memories. I am almost tempted to put the last first; it cannot be emphasized too much, for it is in the house as it is in morals that in the little things the greatest sins are committed.

Now to take up these points in order. Color comes first. We must have it in our homes, for can you think of a more dreary or depressing thing than a colorless room? Yes, we must have colors, but they must, in their combinations, be pleasing to the eye, for as the notes in music produce harmony of sound so do certain tints produce harmony of color.

Nature is full of color; in flowers, fields and sky we find a wonderful color harmony. Often a little flower will give an inspiration for the color scheme of a room, for there are no false notes in the harmony of nature.

In choosing the colors for our rooms we should consider the use of

*Talk given before the Domestic Science Classes of the Pasadena High School.

the room, its supply of light and its size. In the living rooms of the house it seems appropriate to use the darker, rich colors, saving the light, dainty effects for the bedrooms. Certain colors, like dark red, absorb so much light that they should not be used in north rooms or rooms with poor light; some of the buff or light brown shades will be found much more successful.

Whether to use figured papers or plain tints is a problem, and the one that must be decided first, for in the decoration of a room the walls thereof are the biggest and most conspicuous things in it, and upon them hinges the whole decorative scheme.

Many beautiful figured papers can be had, but pictures seldom look as well on them as on plain walls. Another argument against them is that except in the most expensive grades, they quickly fade and lose their original colors. I remember a beautiful green paper that within a year turned to a faded-out brown.

My own preference for the living rooms of the house is plain tints on the walls; for the bedrooms dainty figured or striped papers that will harmonize with white woodwork, for by all means have your bedrooms finished in white enamel. If one of the family is skilled with the paint brush this can be done for the mere cost of the materials. For the dining room, and perhaps the hall, I like a combination of the plain and figured, say a wainscot of wood, burlap or leather effect, above which put a paper with a bold striking design, but it must be a really artistic design because you may have to live with it a long time. Don't put a large figured design in a tiny room, for it makes the room seem all the smaller.

For those who wish a further touch of ornament to their tinted walls let me recommend the modern stencil work whereby borders and many other clever ornaments may be applied to either old or new walls. This stencil work is really the last word in interior decoration, and many homemakers are doing it themselves, as the process is not at all difficult. Many beautiful examples of it may be seen among the sketches which are arranged around the room.

Just a word to those who are tired of their old figured wall papers. You can have a painter calsomine right over it, and if the pattern is not too dark one coat will cover it. I have done this in my own house quite successfully. The paper dealer will not recommend it for it can be done at about one-quarter the cost of new paper.

Next in importance to the walls come the rugs; and to preserve our color harmony the wall color should appear again in the rugs. With plain walls the figured rug makes a good effect, but care must be taken not to use large patterns in small rooms; for a fine bold design made for a spacious 18x30 living room is out of place in a little 11x13 reception room. In rooms with figured walls the plain rug undoubtedly is the most artistic, but if that is not obtainable use one with a very small pattern. One sure way to have rug and walls in harmony is to obtain the rug first and then have the walls tinted to match its dominant color. We must not forget those wonderful oriental rugs that, having all colors in them, seem to harmonize wherever we put them; they are the most expensive of all floor coverings and are a joy forever.

The next element in the harmony of color in our rooms are the window curtains. Being so prominent they should be chosen with great care. It is almost an axiom in decoration that plain curtains should go with figured walls while with plain walls either plain or figured curtains are in good taste; and there are several kinds of net showing geometrical patterns, all in one color, the pattern being brought out by a difference in the weave. The shops these days are showing many excellent designs in curtain materials at very reasonable prices, but remember the simplest ones

are generally the best, and above all if a figured curtain is being selected remember that no matter how beautiful in itself, if the colors do not harmonize with that on your wall it will be a disappointment.

Thus far we have been considering the harmony of color in its application to the individual room, but there is a broader sense in which it must be considered to have a successful house. That is the harmony of color of adjoining rooms. This is more important today than ever before for the time is past when we can decorate each room by itself regardless of the others. The modern tendency in domestic architecture is to make the first floor of a house as open and spacious as possible, so the solid partition has largely vanished from the new houses; hall, living room and dining room often being separated only by columns, beams, pedestals and similar devices.

Thus it becomes imperative to decorate as a whole if we would have an artistic interior. The simplest way is to use the same wall color throughout, or, if changes seem best, variations of the same color. Again a sense of unity can be obtained by using the same curtain hangings throughout. Or if you are using any stencil work, carry the distinctive feature of your design, be it fluer-de-lis, swastica, or whatever device, through all the rooms. Any or all of these methods will bind a series of rooms into an effective harmony of color. Bedrooms being always separated from each other can be as different and distinctive as the tastes of the occupants may wish.

Now for our second point, "simplicity of arrangement." Most rooms have too many things in them. Apply the test of those words of William Morris. They have been quoted so often that one man said he was unaware that Morris ever wrote anything else. "We should have nothing in our houses that we do not know to be useful or feel to be beautiful." Apply this rule and see how it simplifies our rooms. Take the living room, for instance, some comfortable chairs, a table with reading lamp, shelves for books, a few good pictures and a vase or two for flowers; what more is necessary for comfort? The simple arrangement that permits of the comfortable use of all these articles is a vital thing in the home, for both beauty and comfort depend upon it.

It is almost necessary in considering this simplicity of arrangement to bring in our third point, "the absence of the trivial." Something stuck up here, something else there; mantel shelf has thirty-nine things on it. Where is the harmony of color and the simplicity of arrangement now? The presence of the trivial has spoiled it all.

We all know that a few good things are better than a lot of poor things, but how many have thought, as one writer put it, that a few good things are better than a lot of good things. Take pictures, for instance, if you are fortunate enough to have many of them, don't try to hang all of them at once in one room. Put up some of them, and from time to time change them; both the room and the pictures will look better for it. And in hanging pictures what a difference it makes how you do it. Four little pictures in a straight row are not as interesting as if two of them were raised to a higher level. I remember one house that we designed that had a fine broad chimney breast over the mantel. The owner hung a tall, narrow picture over it when, by all the canons of proportion and good taste, the situation demanded a horizontal one. Better no picture at all than a misfit like that.

And the poor, over-worked mantel shelf; don't put all your bric-a-brac, souvenirs and photographs on it; really a pair of candlesticks and choice bit of pottery or two will give it a much more attractive appearance.

The last thing we put into our house is the furniture, and now that we have walls, floors, hangings and pictures all in harmony we must not spoil the effect at the last moment. While the furniture comes in last, its character should be decided upon in the beginning for different types of furniture look their best in appropriate surroundings. Our modern furniture may be roughly divided into two general types—the colonial, including all the classical styles, and the craftsman, oftentimes called the mission.

With light and dainty schemes of decoration the graceful lines of colonial furniture are best, and I think we all recognize that mahogany never looks better than in connection with white enamel.

Now, the craftsman furniture, with its simple, strong lines, demands a darker, richer and more simple style of decoration, and it is desirable that the woodwork of the room be of similar construction, and architects are designing this kind of finish more and more especially for bungalows and houses of similar construction.

While it is not necessary for all the furniture in a room to be of exactly the same style, it is wise to keep the same material for a mixture of oak, mahogany and maple cannot be brought into harmony.

There is a feminine principle that we might apply to our problem of decorating the house; it is, "Let a woman furnish her house as she furnishes herself, with what is becoming," and then we will have well dressed women dwelling in well-dressed houses. Then all you will have to do will be to educate the men up to your standard so that an incident like that I am about to tell you could not happen.

Mr. Newrich had built a great house and furnished it without regard to expense and was showing it to an acquaintance:

"Well," said Newrich, "what do you think of the furnishings?"

"They—er—show a great deal of taste."

"Ah, thanks, think so?"

"Yes, but it's all very bad."

* * *

The World's Tallest Buildings

THE last steel girder in the mammoth 55-story Woolworth building, the tallest building in the world, has been riveted, and an American flag now waves from a steel pole that rises thirty feet above the top of the building.

This tremendous "Old Glory" is twenty-four feet long and twelve feet wide. When completed, New York's newest skyscraper will have cost approximately $13,500,000—for land, $4,500,000; for foundation digging, $1,000,000, and for construction, $8,000,000.

Here is a list of the thirteen tallest structures built by human hands:

Colossus of Rhodes	105 ft.
Pantheon, Rome	150 ft.
St. Isaac's, St. Petersburg	365 ft.
Statue of Liberty	305 ft.
Great Pyramid of Cheops	450 ft.
St. Peter's, Rome	400 ft.
Rouen Cathedral	490 ft.
Cologne Cathedral	516 ft.
Washington Monument	555 ft. 5⅛ in.
Singer Building, New York	612 ft. 1 in.
Metropolitan Tower, New York	700 ft. 3 in.
Woolworth Building, New York	750 ft.
Eifel Tower, Paris	984 ft.

Reinforced Concrete Arches

ONE of the problems which confronts a municipality for the development of its several sections and connecting different isolated regions is that of highway bridge building, particularly from the investment point of view. The duty of the municipality should be characterized by the same effective management as found in high-class private enterprise. Safe and perpetual facilities should be afforded for the passage of our streams at reasonable annual costs to the public and not only should the investment be in the form of a present service to the people, but should meet the needs of future service.

There are a number of conditions that should be considered and affect the final decision as to the type of structure and manner of carrying on the work. In the September publication of the Western Society of Engineers, Daniel B. Luten presents an article which discussed the requirements of the ideal bridge. Extracts of his article are given with the aim of affording interest to those who have the general direction of municipal bridge work.

Twenty years ago there was hardly a concrete arch in the United States; ten years later there were less than a hundred; today there are upwards of ten thousand. This suddenly accelerated growth is due to a realization that the concrete arch fulfills most of the requirements of an ideal highway bridge. Arches of material other than concrete, such as stone, brick, and steel, have been lacking in some important attribute so that no sufficient number have been erected in a limited period to enable any engineer to specialize exclusively in arch design in those materials.

REQUIREMENTS OF THE IDEAL HIGHWAY BRIDGE.

The ideal highway bridge must include among its qualifications the following:

1. Permanence, eliminating repairs and inspection.
2. Artistic appearance to harmonize with its surroundings.
3. Strength increasing with time and traffic.
4. Safety, meaning not merely security but slow failure in case of defects.
5. Stable on insufficient foundations and under extreme flood conditions.
6. Efficient and economical in use of materials.
7. Employing home labor and materials.
8. Providing a roadway continuous over bridge and approaches.
9. Easily widened to provide for increasing traffic.
10. Simplicity in design and erection.

An arch of concrete reinforced with embedded steel has all the permanence of stone; in fact it is more permanent than the usual building stones, and has none of the limitations of steel, such as corrosion and crystallization; for concrete is but slightly affected by the elements, and the embedded steel is protected from rust and vibration. No painting or repairs are ordinarily required, and inspection is superfluous.

A properly-designed reinforced-concrete arch will be in equilibrium under the fixed load. Reinforcement will be required in the arch ring to resist moving load stresses only, and the moving loads are small in comparison with the fixed load. Such a structure, therefore, displays its material in an efficient form, and because of its useful application presents a beautiful appearance. Everyone knows that concrete is a material strong in compression. Its use in the arch without ornamentation, consequently appeals to the eye. This is wholly apart from the relation of the bridge to its surroundings, in which harmony must be secured ordinarily by ornamentation of spandrels and railings. There is no harmony, for example, in adopting a segmental curve or parabolic arc for an earth-filled arch

merely because it carries railway loading, when such curves are not the curves of equilibrium, for the loading.

Since the concrete arch is of pleasing form when properly designed, all that is necessary to make it harmonize with its surroundings is to limit the design to dignified details for rugged surroundings, and to embellish it with ornamentation for cultivated surroundings.

For spans of less than 100 ft., dignity of design can usually be best secured for an arch bridge of moderate rise by the use of the earth-filled type with solid spandrels. But a semi-circular arch can hardly be made to present a satisfactory appearance with solid spandrels, unless the depth of load over the crown be proportional to the rise, not an economical arrangement. For spans greater than 100 ft., especially with great rise, the open-spandrel construction is usually to be preferred, and this accords fairly well with economy in this country, at the present cost for labor and materials. In Europe, where labor is relatively cheaper, it may be desirable from the standpoint of economy to use open spandrels on spans as short as 60 ft. or 75 ft. A hollow spandrel behind a solid spandrel wall is rarely desirable, for the curve is then not in harmony with its loading except for very flattened spans.

An arch bridge, whether in single span or in series of arches, presents the best appearance when cambered in a vertical parabolic curve having a rise of about 1/150 the entire length of the bridge, but not ordinarily to exceed 3 ft. This ornamental camber in the arch bridge also provides for surface drainage of the roadway which may be discharged through the crowns of the arches, if not objectionable below.

Timber, steel, and even stone deteriorate as they grow older. Concrete grows stronger with age. The increase may amount to 50% in the year following the first thirty days. Since traffic on most of our highways is constantly increasing in weight, such an increase in strength tends to keep pace with the growth of traffic. A bridge that decreases in strength must be built excessively heavy, for the day soon comes when its decreasing strength meets the increasing traffic, and collapse results. The bridge that increases in strength with age may be designed for efficiency. Hence the light efficient design is to be commended in such a structure, whereas it receives merited condemnation in steel or wood.

The concrete, since it depends for its strength principally upon the compressive strength of the concrete, does increase in strength as the concrete gains in strength, and it is the only type of bridge that possesses this property. As the concrete of the arch hardens the elastic arch becomes less flexible and will distort less under a concentrated load. Hence the tension in its embedded steel will be reduced as the structure grows older. And since the concrete grows harder and better able to resist higher compressive stresses, while the tension in the steel is at the same time reduced, the structure as a whole grows stronger as its age increases.

An earth-covered arch also increases considerably in strength but in an unknown ratio, by reason of the compacting of the earth fill over the arch and behind the abutments. Many earth-covered arches have been erected with light abutments reinforced with ties from abutment to abutment to resist the thrust, from which the ties have been removed after two or three years to permit the deepening of the channel, and with no resultant yielding of the abutments.

A bridge made of any structural material may be designed to safely support its load by a proper distribution of the material. To make a bridge secure, therefore, whatever the material or type, is simply a mat-

ter of design. But no matter how well planned, a bridge may be defective in erection. In such a case a bridge that fails slowly and with abundant warning is superior to one that collapses suddenly. A structure in which tension forces are isolated in separate members, as in a truss, fails suddenly when any member gives way. A girder of steel in which the dead load forces are concentrated in extreme regions, as top and bottom flange, will follow the same behavior in a less marked degree. A concrete arch with open spandrels supported by separate arch ribs will collapse suddenly in limited regions supported by a defective rib. But a concrete bridge covered with earth filling and stiffened with spandrel walls not only fails slowly but gives abundant warning of overstress. Failure in such a structure is almost always by yielding of abutments or piers which move slowly. There are many instances of reinforced concrete bridges which have settled continuously for months, developing cracks but without failure. In one instance the crown settlement in an 80 ft. span amounted to several inches before it was stopped by a support under the crown.

Reinforced concrete has one marked advantage over most other materials, in that it may indicate conditions of maximum allowable tension in its embedded steel before actual danger exists. This advantage rests in the fact that the coefficient of elasticity of the concrete and of the embedded steel do not bear the same ratio as their allowable stresses. When the embedded steel is stressed to 5000 lb. per sq. in., invisible cracks occur in the surrounding concrete. At 10,000 to 15,000 lb. per sq. in., these cracks become visible. At 20,000 lb. per sq. in., they frequently become objectionable. Herein lies one of the objections to the use of hard steel of high elastic limit, for its coefficient of elasticity has not been increased with its tensile strength, and consequently it cannot be subjected to greater stresses per square inch than the usual allowable 16,000 lb., without danger of unsightly cracks.

In arch design, where the stresses in the arch are magnified by the behavior of the spandrel walls, cracking of the concrete serves the purpose of an extensometer to detect excessive stresses. If an arch is designed too flat at the crown, cracks will appear in the spandrel near the ends of the span. If too flat at the haunches, cracks will appear in the coping over the crown or through the arch ring at the haunches directly under the spandrel only, and not extending far into the soffit of the arch. The tensile stress in the arch itself is rarely sufficient to show cracks actually penetrating the arch ring. Small cracks, particularly in the spandrels, are no indications of failure, being merely the magnified effects of moments in the arch ring, but a properly designed and erected arch will be free from such cracks, if provided with expansion joints in the spandrels above each springing.

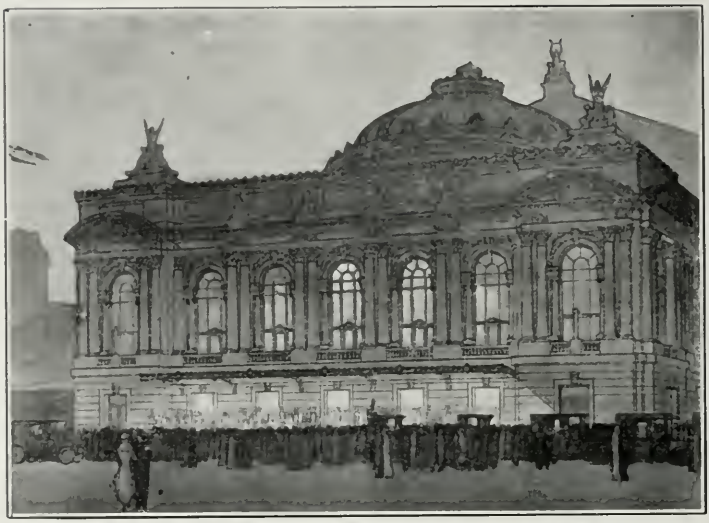
The arch imposes a heavier load upon its foundations than any other type of bridge. But since there is no limit to the expansion possible in footings, the intensity of pressure may be made the same as for any other structure by proper distribution, so that the heavier loading of the arch is objectionable only as affecting its comparative cost. It proves a decided advantage, in fact, when the effects of moving loads on the structure are considered. The heaviest locomotive loading may increase the foundation pressures under a steel trestle of 100 ft. span, several hundred per cent, whereas the corresponding increase under an earth-covered arch of the same span rarely exceeds 20%. The stresses in the latter structure itself are not seriously affected by a considerable increase in the moving load.

Steel and wooden bridges have one great advantage over concrete bridges in stability, in that they can sustain unequal settlements without serious damage. Concrete bridges are not seriously affected by uniform settlement of one or both abutments. But unfortunately, settlement of an abutment is very rarely uniform. Unless founded on rock, the materials underlying any abutment of 18 ft. or 20 ft. length in the average stream are of varying character, whether clay, sand, gravel, or piling. Settlement, if it occurs, due of course to excessive intensity of pressure, will always be greater at one point than another. If an abutment settled uniformly it would not crack. But how many abutments that have settled are free from cracks?

The concrete arch with its great mass is not readily moved by floods nor ice jams. It is consequently a desirable type of structure for a low-level bridge subject to complete submergence. In such cases its roadway and approaches should be paved to prevent scour. A wooden block pavement, so desirable for steel bridges because of its light weight, is rather undesirable on a concrete bridge because of the possibility of its floating away. The wide abutments required by a concrete arch to resist its horizontal thrust add to its stability in flood, for such an abutment may often be undermined for a considerable area at the stream face without injury, since the maximum pressure is at the back. Arch piers are much more frequently undermined than arch abutments, while girder abutments are more frequently destroyed by undermining than the piers, because the earth pressure behind the girder abutments makes the stream face the weak point for attack. The horizontal thrust of an arch, often cited as objectionable, is, like heavy loading, merely a matter of proportioning, since the abutments can readily be designed to resist it. It becomes a matter for criticism only when the cost of such provision becames excessive.

Concrete is a material high in compression values and low in tension and shear. If an arch be designed as a linear arch for the fixed load, it will have no tension, and no shear whatever except in very slight degree for temperature changes and moving loads. The stress in such an arch approximates very nearly uniform compression throughout. Consequently, for a location where a rock foundation is exposed at the surface, no structure of concrete can compete in cost with the arch. But when footings must be expanded to provide for soft foundations or insufficient backing, the advantage is less marked. Nevertheless, the reinforced concrete arch is usually of lower first cost than the concrete girder for the same requirements, in spans exceeding 20 ft. or 30 ft. It will also compete with steel girders and trusses having permanent floor and substructure.

In but few and widely scattered communities are materials directly available for building bridges, except of wood and concrete. Even for wooden bridges of long span, suitable timber must now be imported for most northern counties. For such bridges and for steel, almost all the expenditure for superstructure is, therefore, sent out of the county, and usually out of the state. For concrete arches, the cement amounting to 10% of the cost, and the steel amounting to 5%, together with 5% for superintendence, are all that are necessarily foreign in expenditure, a total of about one-fifth. The concrete girder exports 10% for cement, 25% for steel, and 5% for superintendence, or about twice as much as the arch. Unless the profit on an arch exceeds 20% therefore, it is better policy for a community to let contracts for arches even to outside contractors than to award contracts for girders to home talent, all other advantages being



Façade of the Municipal Opera House for the San Francisco Civic Center
Willis Polk & Company, Architects.

assumed equal. And a similar comparison for steel bridges might exclude them altogether.

A bridge that requires an earth covering has an advantage in that the earth roadway, or gravel, macadam or brick pavement may be extended directly across the structure with no break whatever in its continuity. It is objectionable to build with a level floor of concrete, or any other material that does not have provision for carrying the same materials used in surfacing the highway leading to the bridge. For a change in paving material usually means a chuck-hole where the harder pavement joins the softer. And even an earth covering over a concrete deck is apt to show such depressions after wet weather, unless the earth or gravel covering is more than 12 in. thick. The covering over an arch reduces in depth gradually to a desirable minimum of 8 in. to 12 in., and there is therefore, no formation of chuck-holes if earth covering is used, nor any difference between the earth covering of the bridge and the earth foundations of the road or street itself. Any kind of pavement or surface can thus be obtained over the arch with the same construction as the roadway approaches.

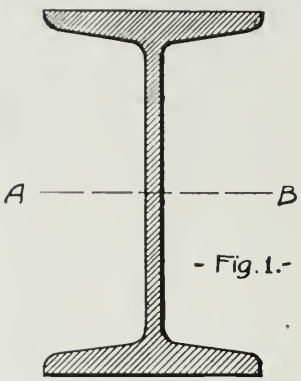
The standard width of highway bridges in the middle western states is now 16 ft.; in many southern states 12 ft. is customary; in eastern states 24 ft. has become quite usual. As a community grows older, it frequently becomes necessary to widen bridges to provide for increasing traffic that could not have been foreseen, or that would have required excessive cost in the original construction. It sometimes occurs that a bridge is erected with a 16 ft. roadway, and that later the coming of an interurban railway builds up the community about the bridge, necessitating a structure of much wider roadway. Deck bridges and arches can be widened at any time without loss of any of the original investment except moving the railing and possibly burying the spandrel walls in the added fill.

A Few Novel Effects in Wicker Portables for the California Bungalow.

Some Further Examples of Bungalow Type Portable Lamps. (Courtesy of Good Lighting.)

The Strength of Corrugated Iron

By H. W. FORCE*



- Fig. 1.-

~ CROSS-SECTION. ~
Standard I-Beam.

THE very extensive use now being made of galvanized, corrugated iron for culverts, flumes, bridge flooring, etc., naturally leads to a wide interest in the possibilities of this material. To the layman it may seem somewhat unreasonable to use sheet metal in any form for a construction which will be required to endure severe external strains; and it is little wonder if the engineer is sometimes at a loss for a clear reason for the faith that is in him, for, in the technical world, the matter is almost too new to have been subjected to exhaustive inquiry. These circumstances have emboldened the writer to suggest the following explanation of the strength of corrugated iron.

One of the greatest triumphs of mechanical science, one which has made possible the most wonderful structures of modern times, is the I-beam. Huge metropolitan buildings, mountain climbing railways, and steel bridges over wide rivers or frightful canyons are brought into actual existence as a result of a structural form which achieves the maximum of strength possible to a given weight of material. In a somewhat different field, this is precisely what is accomplished in the corrugated culvert and bridge flooring arches; and it is interesting to inquire whether the same principles do not underly the efficiency of both forms.

Fig. 1 represents a cross-section of a standard I-beam, which form was primarily designed to resist great bending stresses. The basis theory is

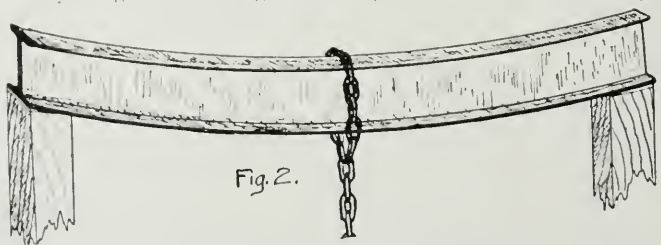


Fig. 2.

that when a bar or beam of this shape is subjected to bending, as in Fig. 2, the upper flanges or top fibers of the metal are subjected to a compressing stress, while the lower flanges or bottom fibers are subjected to a stretching or tensile stress; and, of course, the strength of the beam as a whole depends on the ability of the metal to resist these compressive and tensile strains.

Through the beam there is a plane or line along which the fibers of metal are neither stretched nor compressed, which is called the neutral axis. In an I-beam the neutral axis lies through the line A-B, Fig. 1.

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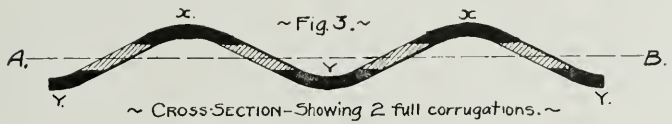
These strains are destructive in inverse proportion to the distance of the outermost fibers from the neutral axis. It is apparent that where the vertical dimension of one beam is twice as great as that of another the amount of compression of the uppermost fibers and of tension on the lowermost is very much greater before any bending can take place, and since these stresses are opposed by the natural strength of the material, it follows that an immensely heavier load can be sustained before the breaking point is reached. In fact, the strength of plates or beams, other conditions being equal, varies as the squares of their vertical dimensions.

It is obvious that in order to secure the greatest strength, most of the metal in the section should be concentrated as far above and below the neutral axis as possible, and those fibers farthest from it do the most work and are most efficient.

If anyone stood in need of a practical demonstration of this principle, it could easily be supplied in this way. Lay, horizontally, a board one inch thick and six inches wide, so that the two ends are supported; and stand upon it. It will bend down under the weight, and perhaps break, but when placed on edge, it will sustain a load many times as great, the reason being that the fibers of the wood are, on the average, farther from the neutral axis than they are when the board is laid flat.



~ Cross-Section—Showing 2 full corrugations. ~

~ Note: The Standard Sheet is 26" wide, containing 10 corrugations.

Fig. 3 shows the cross section of a sheet of corrugated iron, the strength of which, in proportion to its weight, is remarkable. In this form of cross section, the neutral axis lies along A-B. It is seen that while some of the metal is, of course, on the neutral axis, the greater part of it is contained in the curved parts farthest from the neutral axis, as shown by the darkened parts X and Y.

It is now a simple matter of comparison to see that the corrugated iron sheet depends for its strength upon the same basic principle as does the I-beam. The extent to which the principle can be carried, that is to say, the depth and width of the corrugations will be a matter to be determined in the light of further experience. At present, the width of 2½ inches with a depth of ½ inch seems to be giving good service, but for segmental culverts, with scanty covering, and under conditions of heavy traffic, it may be that corrugations ¾ of an inch in depth will be found preferable.

Since it has become possible to obtain iron of a very high degree of purity, with a resulting comparative immunity to corrosion, the corrugated form has assumed great importance in structural materials. In some localities, where the soil conditions make it impracticable to secure absolutely solid foundations for bridges and culverts, this form, on account of a certain elastic strength, is practically superseding all others. Its use as bridge flooring, where arches are laid between steel I-beams and covered with concrete, is somewhat newer; but there seems to be no doubt of its success. Corrugated tanks and cisterns are more in evidence each year, and experiments are being made looking toward its use for lining gigantic oil reservoirs. Other forms in which it may be employed to advantage will undoubtedly appear, for corrugated iron is already recognized as one of the resources of modern construction.

Sand Foundations for High Buildings

SAND, being almost incompressible under ordinary conditions, can sustain very heavy loads with slight or negligible compression. When it directly overlays rock or other thick hard stratum and is securely confined or otherwise protected against possibility of lateral displacement it forms a satisfactory foundation and will carry heavy loads with safety as long as these conditions are maintained, says the Engineering Record.

It transmits pressure laterally so that a heavy vertical load may produce considerable horizontal thrust and to resist it the sand must be confined horizontally by natural or artificial means. At considerable depths below the surface the weight of the superincumbent material affords resistance to transverse or upward pressure and is equivalent to lateral confinement for ordinary pressures. This resistance, of course, ceases whenever an excavation is made below and adjacent to the point of application of vertical pressure.

The presence of water makes a great difference in the character of the sand so that the drainage of wet sand or the saturation of dry sand under pressure is an important matter, while flowing water passing through sand, especially if fine, is very likely to carry the grains with it or produce a considerable movement.

Careful consideration must therefore be given to these factors when it is proposed to build heavy structures on sand foundations. If any changes in the amount of water in the sand are possible adequate safeguards to maintain the conditions must be adopted.

Many heavy buildings of moderate height, including some of the earlier steel cage sky-scrapers, have foundations on sand, usually only a few feet below the surface, and these foundations in many instances have proved entirely reliable. Almost all of them are at or above ground water level. Formerly they were made with timber and masonry footings, then of concrete and now almost entirely of reinforced concrete or of steel beams enclosed in concrete.

Some buildings have a monolithic foundation slab covering the entire area. While theoretically this distributes the load uniformly and produces the smallest unit pressure, it is generally very difficult and expensive to avoid excessive stresses in the distribution, and some such footings, especially those of concrete without adequate reinforcement, have become badly cracked and broken and have permitted serious settlement. It is therefore the general practice now to support the columns singly or in small groups on isolated separate footings proportioned to reduce the loads to substantially the same unit pressure on all.

The Spreckels building, San Francisco, 15 stories high, was built about fifteen years ago with all of its columns seated on a double grillage of continuous I-beams reaching entirely across the lot in both directions and embedded in a mass of concrete more than 4½ ft. thick resting on wet sand 25 ft. below the surface of the street. This has proved satisfactory enduring severe earthquake shocks which it was expected to resist.

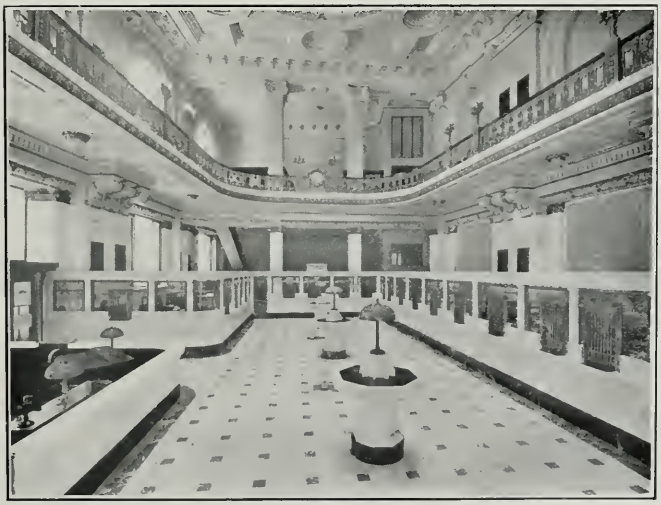
The columns of the St. Paul building, a 26-story structure in New York, have steel beam and girder grillage with concrete footings on the wet sand about 30 ft. below the street. The sand was loaded to 8,000 lb. per square foot and in several years has settled only a fraction of an inch and with such regularity that it has been unnecessary to adopt the special provisions designed for compensating irregular or excessive settlement.

In the new Municipal building, New York, part of the foundations are carried to solid rock and part supported on wet sand, nearly 90 ft. below

the surface. This building is 25 stories high and has a 15-story central tower rising to a height of 580 ft. above the street. The pressure on the sand is 12,000 lb. per sq. foot, and this pressure was adopted after making preliminary and full-size pier tests which showed settlements of less than 3/16 in. and ½ in., respectively, under the working load. A large proportion of the ultimate load has now been applied and the sand foundations show slight settlement, not exceeding the amounts indicated by the tests. The rock foundations show settlements of about ⅛ in., attributed to adjustment of bearings. The settlements in both cases are so small that no injury to the superstructure is anticipated.

The foundations of the 32-story building in Cincinnati consist of steel grillages enclosed in concrete and imposing a load of 11,000 lb. per square foot on dry sand about 50 ft. below the street. In this case the foundations carry an estimated total load of about 104,000,000 lb. and occupy about 70 per cent of the entire area of the building. No allowance whatever has been made for settlement, but it is expected that the full load may cause a packing of from ¼ in. to possibly ½ in.

The comparison of these foundations of sand with those carried through quicksand to deep rock is difficult, but it seems that the large saving effected by the former justified the very careful consideration of both types and a study of rational and practicable methods of protecting the sand. So far reliance appears to have largely been placed on carrying the footings to a considerable depth rather than enclosing them with some protecting barrier that might in some cases prove simple and economical.



Interior Union Trust Building, San Francisco
Clinton Day, Architect. Photo by Walter A. Scott

What is a Bungalow? Does it Cost Less than a House?

BUT seriously, how about a bungalow for the modest home builder? Does it cost less than a house? And, by the way, what is a bungalow? Several years ago that question was answered at length by Arthur C. David in an article charmingly illustrated with examples from California. The California bungalow, as he defined and described it, with its exaggerated eaves and Oriental or Japanese accent, is out of place in the northern and eastern states, except when intended exclusively for summer residence. But his conclusion that the buagalow, so-called, would not become a popular type of dwelling in the north and east has proved quite incorrect. As a matter of fact, there is at the present time no close agreement among American architects as to just what peculiar characteristics differentiate a bungalow from the general run of houses of moderate cost in expensive construction and simple furnishing.

In view of the wide variance of opinion as to what constitutes a bungalow, particularly in the middle west, where buildings of this type are becoming very popular for small suburban homes, it may be well to admit that a bungalow is an unpretentious house, with liberal porch space, having one or more bedrooms on the ground floor, and in which whatever attic or second story space the design provides shall be utilized for sleeping purposes to a considerably less extent than in the average cottage or house. Many so-called bungalows are merely variations or modifications of the universal type of story-and-a-half workingmen's cottage, but the name has been a godsend to many who a few years ago would not have dared to build such cheap dwellings in good middle-class suburban neighborhoods.

A big porch across the street front and wide eaves and an open arrangement of living and dining room are really the only distinctive bungalow features of these little houses, but they help a lot when coupled with the magic title "bungalow."

In some middle western cities whole districts are being largely built up with these so-called bungalows. Many of them provide two or three bedrooms on the ground floor, with additional provision for one or two more fair sized attic rooms, the attic space, however, being left unfinished in those which are built by real estate speculators. In a building of this type, however, with the rather low-pitched and spreading roof, which is an important characteristic, the attic rooms are seldom fit for use except as servants' rooms, during our hot northern summers, as they are in gable ends or in single dormers, without cross draught. In the south the bungalow roof space contains no rooms whatever.

The recently developed mania for bungalow building, which is so evident, for example, in the vicinity of Chicago, may be partly explained by the fact that an increasing majority of our metropolitan city dwellers live in "flats" until they are ready to build or buy homes for themselves, and are so accustomed to the conveniences as well as the drawbacks of a one-floor habitation that they are loath to change. Then, too, the wife who does her own work, with one or two small children to look after, greatly appreciates the convenience of this way of living on the level, particularly if she be not strong

Offsetting the convenience of bungalow living as well as the undeniable charm and "hominess" of a low-roofed, spreading cottage, as compared with the stilted, box-like proportions of the average little seven or eight-room cottage, is the excessive space occupied by the building in proportion to the accommodation it affords, crowding the ordinary suburban lot or necessitating larger grounds, and the common objections to sleeping on the ground floor, particularly in a flat country having a normal rainfall, although in the arid or semi-arid regions of the west this latter objection disappears.

Much of the charm of the California bungalow is due to its very low proportions. In the northern bungalow cottage this charm is lost to a degree, owing to the necessity for a well-lighted basement and the desirability of elevating the bedrooms well above the ground.

The small bungalow, like the small flat, is seldom well planned from an architect's standpoint. As a rule, the relation of bedrooms and bathroom to the living room and dining room has all the informality found in a small seashore cottage. In a good plan the bedrooms and bathroom are always arranged on a little private hall or corridor, which may be completely isolated from the rest of the house. The same is true in the planning of flats and apartments, but is neglected in most speculative buildings of these types, because flat dwellers have become accustomed to such really bad features as bedrooms opening off living rooms, dining rooms and kitchens, without other means of entrance or exit, and real estate dealers insist that prospective purchasers overlook these trifling drawbacks in view of the space which is saved thereby, and thrown into bedrooms, closets, etc.

In considering comparative cost as a factor in deciding between the erection of a bungalow and the two-story houses, a question is raised which is rather difficult to answer. The California, or summer cottage, type of bungalow is undoubtedly cheaper to build, but in the north, for all the year around use, the bungalow requires a good basement, which for a small building should include the entire ground plan to accommodate laundry, store and fuel rooms and heating apparatus. If the building is to be set low enough to look well in a stiff clay soil, the cost of excavating and building the foundation walls will be much more than for a two-story house affording equal accommodations. Much more roof also will be required to cover the same number of rooms. On the other hand, less space need be devoted to the stairs, which may be placed out of sight and be more cheaply built than in a house, or omitted entirely except for access to the basement.

Without any definite comparative data, however, it is doubtless safe to say that a thoroughly well-built bungalow of from six to eight rooms will cost more than an equally good roomy house. The former, however, lends itself more readily to a comparatively rough and inexpensive treatment, particularly as to exterior covering, which may be of rough unstained boards, shiplap or shingles, or perhaps a good, heavy asphalt roofing felt, with fine crushed quartz or gravel embedded in the surface, divided into vertical panels by rough, undressed boards, giving a sort of half timbered effect, the felt afterward painted with one of the flat paints especially prepared for exterior stucco work.

In building a comparatively large, rambling bungalow, it is unnecessary to excavate under the entire house, a basement under half the floor area being perhaps sufficient to accommodate laundry, heating apparatus, etc., provided that the latter shall be a steam or hot water system. The underpinning of the unexcavated parts of the bungalow may consist of brick or concrete piers, between which heavy tarred planks are fitted, against which the earth is banked for warmth when the grounds are graded. The modern bungalow makes an ideal farmhouse, particularly for the rolling and hilly regions so common throughout our northern states. On a well-

drained hill or high knoll the objections to ground floor bedrooms disappear, and no type of habitation can be more pleasing and harmonious in a rural landscape than the broad, low, homelike house of one story.—Architectural Record.

* * *

Building Costs for a Modern Skyscraper

THE following building costs for a modern first-class office building are contained in a paper read by J. A. Strouss, of Knox, Strouss & Bragdon, Pittsburg, before the Manufacturers' and Contractors' Club, of Pittsburg. The total cost of the building, as will be seen, was $1,270,421, divided as follows:

Wrecking	$ 4,158	.33
Excavating	47,990	3.79
Shoring	34,876	2.74
Steel work	156,563	12.33
Stone, cement and concrete	95,525	7.52
Fireproofing	38,865	3.07
Brick work	56,222	4.44
Plastering	39,560	3.11
Painting	20,335	1.60
Mill work	86,100	6.77
Carpenter work	117,000	9.22
Terra cotta	40,000	3.15
Heating	75,330	5.93
Elevators	106,200	8.36
Electric work	40,500	3.17
Sheet metal	21,840	1.72
Plumbing	51,520	4.05
Waterproofing	9,500	.75
Metal lathing	9,100	.71
Ornamental iron	75,900	5.98
Tile and marble	90,000	7.09
Weatherstripping	1,025	.08
Vaults	24,750	1.94
Hardware	1,500	.12
Vacuum systems	5,000	.36
Mail chute	2,250	.18
Revolving doors, etc.	5,700	.45
Steel lockers	8,335	.66
Refrigerating machinery	3,827	.30
Roofing	950	.07
	$1,270,421	100.00

"The list is interesting," comments the author, "as shedding light on the question as to whether a mason or a carpenter is a logical man for a general contractor on work of this type, as it is generally considered by most of us that the trade having the largest interest in the proposed structure is in the best shape to take the general contract.

"It is also of interest as showing one of the reasons for the elimination of the general contractor and the subletting of work direct by the owner through the architect.

"The writer will confess to being astonished at the cost of the equipment, as most of us would hardly consider it true that almost one-fourth of the total cost of the building goes into the various auxiliary devices which are now considered necessary to make an office building habitable."

Making and Laying of Composition Flooring

Secret Formulas, the Mixing and Laying, Use of Colors and Cost of Raw Materials

BY ROBERT P. SKINNER.

THE report on "floorings of sawdust and magnesium chloride" has given rise to innumerable inquiries from correspondents from various parts of the United States, all of whom express a desire for further details. It was stated in the original report that extensive use was being made in Germany of a flooring composition consisting of a solution of chloride of magnesium to which pulverized masnesia is added, together with considerable proportions of sawdust, and which, being skilfully compounded, provided a relatively inexpensive and fairly fireproof flooring material, especially useful in large office buildings and public halls. One inquirer stated that the art of laying these floorings in Germany is far ahead of the practice in America, and asked particularly for the method of coloring the material and of governing its expansion and contraction.

According to my information, there should be neither expansion nor contraction of the material from any cause whatever, after a flooring of magnesium chloride is once laid. The very ingredients are such that there is no buckling or cracking due to heat or cold: In Hamburg the composition is mixed and spread where the building operations are being carried on, the prepared dry meal being delivered in bags from the factory and the lye water made on the spot. It is impossible to state the precise rule for the composition of the meal or for the lye solution, these being the manufacturers' secrets and each manufacturer claiming particular merits for his own formula. These formulas are not patented, and there is no doubt that they are all substantially alike. Several manufacturers have expressed a willingness to sell their process, either for the whole of the United States or for a restricted territory. One Hamburg firm sold its formula for a small place in southern Germany for $1,428.

The mixture of meal and lye water is made in a mortar box, and when a thickness of not more than 2 inches is proposed it is spread and smoothed with a hand trowel; when a thickness of four inches is desired, the material is tamped and then smoothed. The amount of lye water used in mixing the meal depends upon whether the flooring is to be simply spread or tamped; if spread the ordinary practice seems to be to use from 4 to 6 buckets of the lye water to 1 sack of meal, the sack apparently containing from 50 to 60 pounds.

These floorings were first utilized in large office buildings in Hamburg, and probably elsewhere, as a basic flooring for linoleum and also for the addition of artificial wood-marble flooring. These wood-marble floorings are substitutes for wood, and the panels are polished like hardwood floors; that is to say, smoothed with steel shavings and given a coating of wax. When linoleum is applied, it is glued to the magnesium-chloride foundation with a linoleum cement, which is said to be composed of copal resin and putty.

In Germany linoleum is never tacked to wood or artificial stone flooring, as is usual in the United States, but it is invariably glued in place, an ordinary flour paste being used when it is applied to wooden floors. Linoleum thus laid is washed afterwards with soap water and when dry given a coating of wax, exactly like a hardwood floor. This treatment is the ordinaary practice in the large office buildings in Germany, even in hallways where thousands of people pass in the course of a week.

The magnesium-chloride flooring was first considered a particularly excellent foundation for linoleum, and it is only in comparatively recent times that it has been found possible to color it and to lay it so attractively that no linoleum covering is necessary. It is laid tight against the side walls, making the

*U. S. Consul General, Hamburg, Germany.

entire floor waterproof. In bathrooms and around toilets it is brought to the edge of the porcelain and the joints are rounded upward, so that no crevices present themselves in which dust or dirt can collect, nor should there be any joint through which water might percolate.

The favor in which linoleum is held in this country is such that manufacturers of these new composition floorings have some difficulty in inducing buyers to put down this material, in solid or varied colors, in preference to a similar natural color foundation with linoleum coverings, although the cost and wearing qualities of the former method are said to be much in its favor. Linoleum costs in Hamburg about 80 cents per square meter (a square meter equals 1.2 square yards), and the cheapest class of magnesium-chloride foundation pavement costs 48 cents, making a total of $1.34 per square meter against a cost of $1.19 per square meter for a colored wood-marble floor attractively finished. The new floorings may now be obtained in almost any color, or in mottled colors. When mottled colors are desired, the different colored mixtures are prepared separately and tamped in together as the floor is laid. Special dyes are required for these operations, and there are a number of manufacturers who produce them. In a general way, from 15.4 to 22 pounds of color are necessary for 220 pounds of mortar. The proportions vary with the strength of coloring desired. The colors themselves are of different prices. One manufacturer quotes red, blue, black and brown at $4.76 per 220 pounds; oxide green, $53.55; and blue, $19.04 to $21.42 per 220 pounds. Another manufacturer quotes red dye, very much in demand, at an average price of $3.81 per 220 pounds. The prices again vary with the quantity ordered. The more delicate tints, such as green and blue, are more sensitive to light, particularly if exposed for a long time, than the quiet colors, such as black, red and brown. Red is especially favored, and the many different shades are said to be absolutely unchangeable. Most of the manufacturers of these dyes also supply dyes for cement tiles, stucco, imitation marble, sand-lime bricks, and cement blocks.

One Hamburg manufacturer claims for his own composition that it is crack-free under all circumstances, warm under foot, elastic and sound-proof, preferable to linoleum, as linoleum curls at the edges after a time, breaks or wears away, and absorbs water, permitting it to leak through. This same manufacturer submits a certificate of examination from the royal board of examiners of material in the Technical High School in Berlin, reporting as follows on the examination of samples of his material:

1. After the sample plates were soaked in water and had been exposed to frost 25 times at 15 degrees C. below zero the samples remained unharmed.

2. After the plates had been lying in water for eight days a very small proportion of water (9 per cent) had been absorbed.

3. After the plates had been attached to a vessel containing water—after 24 hours, none; after 48 hours, 2 cubic centimeters, or 5 per cent; after 72 hours, 4 cubic centimeters, or 10 per cent, of moisture had been absorbed.

This manufacturer also claims that in this country his composition is cheaper than pine flooring, tiling, or stone; that it may be used to cover old worn-out wood and stone-plate floorings, staircases, and the like without the necessity of removing the old floors. Wherever a foundation is firm and dry it may be laid without any complicated preparations. Finally, it may be cleaned with cold water and only very seldom should lukewarm water be applied. After complete cleansing and thorough drying the flooring should be rubbed with raw linseed oil or should be waxed.

Magnesium chloride, the chief ingredient of these compositions, is worth, in 50-ton lots, in casks of 880 pounds f. o. b. Hamburg, $11.50 per ton fused. If in lesser lots, $12 per ton. Greek calcined and powdered magnesite, in barrels of 396 to 440 pounds, is worth $33.32 to $35.70 per 2,000 pounds f. o. b. Rotterdam. Raw Magnesite, in casks, is worth $30.94 per 200 pounds f. o. b. Hamburg.

Architects and Their Services

A Misconception Regarding the Practice of the Profession and a Correction

By D. KNICKERBACKER BOYD

Many people who have the building bee in their bonnet but who are not quite ready to go ahead, are afraid to approach the architect and talk the house over for fear he will consider himself definitely engaged, or for fear he may charge for every word of advice given. Now, most architects are pleased to give suggestions and to make rough sketches gratis in the hope of getting the commission. But if these sketches are taken to an inferior man to be worked up, or as it is not uncommon, they are given directly to some contractor to build from, the architect usually resents such treatment and sends a bill. No fair-minded person need be afraid of visiting several architects and frankly stating to them all that he came merely to talk the house over and to see some of their work. They will probably all furnish him with rough sketches with the understanding that he is not to be charged for them. In fact, many men in the profession obtain all their work in this way, not only residential, but even municipal, where the expense of preparing rough drawings may amount to a thousand dollars or more. Those who fail to secure the work simply put it down to profit and loss. But if the successful competitior, after making complete preliminary studies, should be told that the owner is forced to abandon his building project, he expects, nevertheless, to be remunerated for them. The usual charge for complete studies is one per cent of the estimated cost of the work, while for completed working scale drawings it is not unsual to ask one-half of the total commission that would have been paid had the work proceeded.

This brings to mind the story of a young architect, who while visiting his mother in a house he had built for her, was asked by the woman owning the adjoining farm to come and look over the old farmhouse of her ancestors and suggest how it might be remodeled. He spent several mornings measuring up the house and drawing a number of schemes within her figure, $3,500. Then it occurred to her to ask what his commission would be, and on learning of the customary six per cent, she felt outraged. She expected to pay $50 at the most, and if the architect charged six per cent, she "guessed" the local builder could do the work! and she locked up the young man's sketches in her desk. "But," she went on, "as I consider your mother a very nice neighbor and as she has promised all the apples from the trees along the dividing fence, I would like to pay for the time you've wasted." The amused architect replied that his "wasted" time was worth $25 and left. No cheque came, however; but late in the fall his mother received two barrels of her own apples valued at $5 each, and in payment, so the accompanying note read for her son's professional services. This happened, we are sorry to add, in Connecticut.

THE above article appeared in The Architect and Engineer and a number of other architectural journals some months ago, having been reprinted from House Beautiful, a periodical that is very well informed, as a rule. It seems the paper got off wrong in this instance, however; at least that is the judgment of the Publicity Committee of the American Institute of Architects, which has prepared an open letter to the publishers, refuting the charges and criticising the management for its apparent ignorance. Portions of the reply will be found interesting reading:

This article is so amateurish and misleading that I was loath to believe it could have emanated from the columns of your paper. That such was the case can be accounted for only on the assumption that, by some grievous oversight, it crept in unawares. It is inconceivable that any publication of the standard to which yours is believed to have attained could have intentionally given currency to such erroneous and unfair statements.

But it is quite different, and far more regrettable, when such a false doctrine has been preached from a prominent rostrum like yours to a large circle of hearers, who wish, of course, to be correctly informed on matters with which they are not familiar; people, moreover, whose taste and ideals your magazine, among others, is, in many ways, doing much to elevate.

The architects themselves, even through their own and other professional publications, cannot so well reach the people they would like to interest and inform regarding the practice of their profession, its activities and its aims. They feel, therefore, that they should be able, with reasonable certainty to count upon the co-operation of such publications as yours in furthering a more thorough understanding between the architect and the building public. Through such means only can a better appreciation of architecture by the public be stimulated and the art of the country be improved.

It appears to me that, notwithstanding the substance of the article, your intentions were of the best. You evidently meant to advise the public to consult architects of a kind whose probity and ability would be unquestioned, rather than to engage inferior men or to give sketches to some contractor.

But this advice is entirely nullified by the remarks addressed to those people who have the "building bee in their bonnet" when you say, "Now most architects are pleased to give suggestions and make rough sketches gratis in the hope of getting the commission." . . . "They will probably all furnish him with rough sketches with the understanding that he is not to be charged for them."

Were this actually true would not any "fair minded person" hesitate to employ those shopping methods among professional men, that you have suggested? Would not the man of even ordinary business acumen hesitate to engage a person who would lend himself to such methods? Would not such a proceeding give him cause to brand the profession of architecture itself as lacking substantial ethical backbone? The want of system that once prevailed in the professions has been superseded by a more scientific treatment, and architecture, like the other professions, has taken great strides towards securing that modern desideratum of the business world—an efficiency basis, whereby a far greater conservation of human energy is made possible.

In presenting to the public such a distorted view of architects and architecture you are unjust to all three; to your readers who come to you for truth and enlightenment, to the conscientious men who constitute a great majority of those practicing architecture; and to the profession which has gradually emerged from the ooze of capricious remuneration on to the solid rock of the Schedule of minimum charges.

It is true that there are architects who conduct their business along the lines indicated, but, fortunately, their number is very few. It is quite certain that your statement "many men in the profession obtain all of their work in this way . . . and those who fail to secure the work simply put it down to profit and loss" is a flagrant exaggeration.

It is palpably impossible for many men in the profession to secure all of their work in this way as such a procedure would automatically work their extinction—many men could only secure some of their work in this way and only some very few men could secure all of their work in this way.

It is merely a question of economics. The accepted fact that something cannot be obtained for nothing holds quite as true in architecture as it does in law, medicine, or any other profession or business. You surely admit that even "the laborer is worthy of his hire." Is it not just as necessary that men in the higher walks of life should receive at least a modicum of recompense for effort honestly expended? Your sentence would, therefore, be more accurate if it read, "In fact some men in the profession, by reason of their inexperience or their inability to secure work in any other

way, frequently furnish rough sketches with the understanding that there will be no charge made for them. Such practice is the exception, however, not the rule."

I trust that you may see your way clear to modify some of your assertions so that your readers may be brought to feel that the proper attitude to assume in selecting an architect would be this:

From a careful inspection of executed work, from published illustrations, or through an acquaintance with the personal qualifications, determine which architect you wish to employ—and engage him. Or if the architect offers to make sketches for you without charge, ask him why he can afford to be so liberal with his time. If he frankly admits that it is because he cannot secure work otherwise, by reason of his inexperience, tell him that you will gladly encourage him by starting his career and that you will entrust him with your work in case he can please you, but that you cannot think of incurring an obligation in case he fails to please you. If his sketches are satisfactory you may flatter yourself that you have been discerning enough to recognize a man of innate talent and have helped him to make good. Every one must make a start and you will have helped him to make his. But if he does not please you, pay him by all means and go to some one else of superior ability.

If you find that you must pay this more capable architect a higher fee, as you doubtless will, be astute enough to realize that he, merely by his higher efficiency, will be able to save you probably more than his entire fee—at the big end—the total cost for the quantities received.

If, on the other hand, an architect—without the excuse of inexperience—offers to make you sketches for nothing, look out well for yourself if you engage him. In the end somebody has to pay for the sketches he makes for nothing, and you are likely to find yourself paying, in some way or other, not only for your own work, but for the sketches which he has been making for some of the other people for nothing.

The moral after all is summed up in the golden rule. "Do unto others as you would that they should do unto you."

Your statement that many architects obtain all of their work in this way, even for municipal work when the expense may amount to a thousand dollars or more, is too preposterous to be entertained by any right thinking person.

I have refrained so far from quoting the American Institute of Architects in this matter, but I conclude by enclosing you copies of documents issued by this national body, which constitutes the majority of the reputable men practicing architecture in this country. These are:

"A circular of advice relative to Principles of Professional Practice and the Canons of Ethics.

COMPETITIONS:—A circular of advice relative to the conduct of architectural competitions and a code governing the conduct of members of the American Institute of Architects taking part therein.

"Professional practice of architects and Schedule of Proper Minimum Charges."

They cover nearly all of the points raised by your article. In connection with the charge of six per cent you will observe that this amount is the minimum only on the larger character of work and does not apply to residential or domestic work.

Few architects do residential work for less then seven to eight per cent according to the cost of the house and the character of the interior finish. And many of them receive ten per cent which is not too much for complete and satisfactory services under the complex requirements of the day.

You will also see by the "Schedule" that the "usual charge for complete studies" is one-fifth of the entire fee and not one per cent of the estimated cost. And that for complete working drawings it is usual to receive three-fifths of the entire fee—and not one-half.

With the Contractors

Contractors Associations—Uses and Abuses

By WM. E. HAGUE,

Secretary of the General Contractors Association of San Francisco

IT has often been said that this is an age of organization, more so than any previous period in the world's history. To verify the accuracy of this statement one has only to call on a responsible firm in almost any line of business, and it will be found that that firm belongs to an association which represents its business interests with more or less effectiveness.

The contractors and material men of this city for years past have been together from time to time in associations representing their particular craft or line of business. Many of these associations have been poorly organized, badly managed and have really been useless in accomplishing the object for which they were formed.

To build up a really effective organization among contractors it is absolutely necessary that the same shall be properly financed, with ample funds in the treasury at all times to carry out any particular object desired.

In times past when forming an organization of a building craft the organizers have been too prone to aim to create a combination or trust which would alone benefit the members of the particular association interested, to the detriment of those on the outside. To establish a really effective organization and one that may continue to successfully exist, care should be taken that the objects aimed at are the promotion of the welfare of the members and the general promotion of the business interested, without seeking to put a ban upon the outsider. An association formed on such lines and conservatively managed creates few enemies, and in the due course of time nearly all those who are desired as members will join and be pleased to share the legitimate benefits accruing from the associated effort.

A particularly glaring instance of an association formed for the promotion of the welfare of its members only, and aimed as a detriment to the outsider, and ultimately a detriment to the entire building business, is an association of specialty contractors originally formed in Sacramento about one year ago and known as the "Contractors and Dealers' Association." A member of this association is said to have made the following remark several months ago to another contractor in speaking of the advantages to be derived from membership: "We are going to build a fence around Sacramento and you had better get inside." It is also said that the man who was thus addressed stayed on the outside and thereby proved his sound business judgment.

The method and plan of operation in this association has been briefly as follows: In the first case the organization is a central body of specialty contractors and material men, composed of the various associations of specialty contractors and material men, who are represented in the central body by a delegate. It was proposed by this organization that all subcontract work done on a building MUST be done by one who was in an association affiliated with the central body; in other words, if a general contractor sublet his plastering to a plastering contractor who did not belong in the combination and sublet the balance of his work to contractors who

did not happen to belong to the association, all the contractors belonging would quit work until the plastering was let to a plasterer who was a member of the Contracting Plasterers' Association. The result in Sacramento has been a number of strikes, lockouts, boycotts, etc., and a detriment to the building business of that city and to its growth.

Mr. J. W. Gaba, a contractor operating in Sacramento, has stated that buildings cost twenty-five per cent more in Sacramento than in any other city in California, largely as a result of the policy followed by the Contractors and Dealers' Association. Real estate dealers, capitalists, general contractors and specialty contractors not in the combination have complained of the arbitrary conditions, and the so-called "building trust" is now being investigated by the Grand Jury in Sacramento. It seems quite likely that indictments will follow, and possibly some of the contractors who have been officials or prominent workers of the organization will be fined or sent to jail. In our own city of San Francisco we have a branch of this meritorious combination, known as San Francisco Local No. 2, and which is working under the same by-laws and practically the same rules as the parent body.

This is proposed to be a state organization, with branches in other cities already forming. The San Francisco branch of this organization has been seeking, by all means in its power, to induce owners, architects, the City and County of San Francisco and the Exposition Company to segregate the work. If their request is granted it is hard to foretell what will be the cost of erecting buildings in San Francisco in the future if the same plan is followed out as has been in effect in Sacramento, not to mention the trust and labor conditions which will exist on construction under such a plan and fostered by such an organization. It is only fair to state, however, that the contractors of this city who have affiliated themselves with this body have up to this time refused to boycott a building where a sub-contractor was not a member of their association, despite the fact that repeated efforts have been made to put into effect such a rule. Perhaps the only reason that this rule has not been adopted here is owing to conditions and to the fact that this is a larger and more cosmopolitan city than Sacramento. If the rule is adopted later it will undoubtedly create a great deal of trouble for architects, owners and general contractors. Segregation of work is seldom of ultimate advantage to an architect or an owner, and up to the present time it would seem that these have paid little attention to the request that they segregate their work, although some architects are still following this old method and letting their contracts under the fond belief that they are saving money for the owner.

Another meritorious organization which has existed in San Francisco for some years past, to the ultimate detriment of its members and to the building business and business interests of San Francisco, is what is known as the "plumbing trust." This is a combination which practically and by agreement exists between the wholesale plumbing supply houses, the plumbing contractors and the Plumbers' Union. As a result of this combination it is impossible for an owner or a general contractor to ascertain the net cost of plumbing goods. This combination as existing between the master plumbers and the journeyman plumbers has resulted in the adoption of many arbitrary rules by the latter. For instance: it is impossible for a master plumber—even though he were in the first case a journeyman plumber—to apprentice his son to the trade. The son, therefore, has little chance of eventually becoming a master plumber, with an adequate knowledge of his business. Can you, Mr. reader, imagine a greater trust? Only the sons of journeymen plumbers are allowed to be apprenticed to the trade, and only one apprentice to four journeymen may work on a job.

A general contractor of San Francisco, who is a man of the highest integrity and financial responsibility, was recently figuring a large contract in the South. No master plumber of San Francisco cared to figure on the work, as it was too far from town. The general contractor was therefore placed in a position where it became necessary for him to figure his own plumbing work, but the wholesale plumbing houses refused to quote him a figure, except for cash, and without allowing him the usual trade discount given to master plumbers. Even with this handicap the general contractor of this city was able to put in a bid for the work as a whole, which has secured him the contract, and he will undoubtedly be able to buy his plumbing goods in Los Angeles, and either do the work himself or sublet to a plumbing contractor in the South. Surely such a condition places this city at a disadvantage in competing for work, and ultimately works to the detriment of every citizen of the community.

There is a so-called central body of the building industry, known as the Building Trades Employers' Association, of San Francisco, and composed of ten associations of the building crafts, which are all co-operating together harmoniously and without any effort to create a combination or trust, but which is, nevertheless, continuing to successfully exist and to accomplish very effective work for the betterment of those affiliated. A notable instance of this legitimate co-operation recently occured in the case of the demand of the Structural Steel and Ornamental Iron Workers' Union for a reduction in hours, which demand it was impossible for the steel and ornamental iron contractors of this city to grant and continue to successfully compete for business. The result of the controversy was that the unions withdrew their demand at the last moment, realizing that the combined opposition of the building business would place them in a precarious position in the event of a strike. This signal victory for the employers undoubtedly was of great financial benefit to the entire building business of San Francisco, and furthered the interests of the community at large.

There are many things which an association operating legitimately and formed on proper lines, with the requisite financial support, can accomplish for the members without hurting the business interests of the outsiders, and we have a notable instance of such an organization in the "General Contractors Association" of San Francisco, which is now about to locate in its new and magnificent headquarters in the Sharon Building on the northeast corner of New Montgomery and Jessie streets. This association has only been incorporated for a year and a half, yet it has succeeded in building up a treasury of $20,000 and is becoming a real factor for good among the building fraternity of this city. By conservative business management and effective co-operation on matters affecting the business welfare of its members this body has progressed more favorably than any previous organization of builders in this city, and it will undoubtedly continue to increase in strength and to work more effectively for the betterment of conditions as time goes on. It is organized and managed on lines which are open to the fullest inspection of outsiders, and has already proved of great benefit to all the stockholders.

Another effective association is known as the "Cement, Lime and Plaster Credit Association." This association during the past two years has succeeded in establishing an effective credit system for their mutual protection in selling material. This has worked to the best advantage of the building business, and is a legitimate protection to the material dealers who have thus co-operated in establishing a rating for their customers corresponding to their actual business experience with them.

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Oakland Architectural Association

Meets Third Monday Each Month.

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Favorable to Architects

In deciding the case of Sanguinet & Staats at Fort Worth, the well-known architects, vs. the Colorado Salt Company, et al., the court of civil apeals at Fort Worth held that an architect is entitled to recover under the mechanic's lien law for work performed by him in the erection of a building. This question had not heretofore been decided. The statute reads that "any person or firm, lumber dealer or corporation, artisan, etc.," shall have a lien on the property erected and the lot or land to secure payment for labor or material. No explicit provision is made for protecting the architect who might have claim for plans, specifications or supervision of the work, but the court held that the wording of the statute in reference to "any person or firm" included the architect, and rightly so, and rendered its decree in favor of the plaintiffs for the commission. An architect who prepares plans and specifications certainly figures in the construction of a building, and is entitled to his fee the same as others connected with the construction.

Five-Story Apartments

Plans have been completed by Architects Falch & Knoll of San Francisco, for a five story and basement brick and steel apartment building for J. H. Iljul, to be erected on the northerly line of Post street, 110 feet west of Larkin street. This building will cover a lot 67 by 120 feet. There is provision in the plans for a large store on the ground floor, besides a lobby and entrance hall. The upper floors are laid out for apartments of two and three rooms, private bathrooms and halls each. The front will be faced with terra cotta. The interior finish will be in pine and redwood, with hardwood floors in halls, living and dining rooms and tiled bathrooms. The equipment will include steam heat, hot water, vacuum cleaning plant, wall beds, electric elevator and dumb waiters. The estimated cost of the building is $85,000.

Post Street Hotel

Mrs. R. S Browne has had plans made by Creighton Withers, the San Francisco architect, for a six story and basement hotel building to be erected upon her lot on the southerly line of Post street, west of Mason street, San Francisco. The building will be of the class C type, with steel frame. The floors are arranged for about 200 guests' rooms, nearly all of them with private baths, and so designed that suites may be had at will, with one or more bathrooms. Pressed brick and terra cotta are selected as the materials for the exterior.

Portland Architects

The Portland Architectural Club held its first social meeting of the season early in October. The feature of the evening was a discussion of the opportunities and benefits of student work in architecture with special reference to the local situation. This subject has been stimulated among the architects of the city and their draughtsmen owing to the opening of the architectural club's atelier.

The Portland Engineering and Architectural Society, whose widely known luncheons have become a feature of Portland life, is arranging to have permanent club rooms and a committee has been named for the purpose of securing desirable quarters.

British Columbia Architects

Steps have been taken by the newly-formed British Columbia Society of Architects, whose headquarters are to be at Victoria, to prepare permanent constitution and by-laws, and also to make a generally satisfactory draft of legislation to be asked of the provincial house at the coming session in January. Among the proposed legislation are a code of ethics for members of the architectural profession, a uniform scale of charges, a uniform contract between owner and builder and between owner and architect. The draft of the bill for the incorporation of the association and the regulation of the interests of the profession in this province has been approved and it is now ready for the meeting of parliament in January next.

Personal

Edwin T. Banning, one of the best known architects of New England, has opened offices in the Timken building and will make San Diego his home. Mr. Banning has had wide experience in the planning of public buildings.

A. H. Stibolt and G. Pardee, architectural and structural designers, have formed a partnership and have opened offices in Suite 604, Ferguson building, Los Angeles.

George W. Eldredge has opened an architectural office in Suite 804-805 Security building, Los Angeles, and will be pleased to receive catalogs and samples from material dealers. Mr. Eldredge is from Salt Lake City, and was formerly senior member of Eldredge & Chesebro, architects, who designed the $600,000 high school now in course of construction in that city.

Architect Frederick Noonan has purchased the stock of Architect Charles Kysor and A. Lyddy in the corporation known as Frederick Noonan and Charles Kysor, architects, Incorporated. Mr. Noonan will continue in business at 904 Wright & Callender building, Los Angeles, while Mr. Kysor has opened offices at 511-12 Wright & Callender building.

More Money Wanted for California State Buildings

The total appropriations—for support and for new buildings and improvements—desired by six State Hospitals and four of the State Normal Schools, aggregate $8,323,068, according to records in the office of the State Board of Control gathered from the recent hearings before the Board and the State Comptroller. This total does not include the Fresno, Santa Barbara and Los Angeles State Normal Schools, the State Prisons or the reformatories.

Here is the way the requests are segregated:

Special appropriations, for buildings and improvements for Napa State Hospital, $290,300; Mendocino State Hospital, $102,500; Stockton State Hospital, $397,200; Southern California State Hospital, $380,000; Agnew State Hospital, $242,000.

The total general appropriations asked for by the six State Hospitals are $5,361,518. The California Veterans' Home at Yountville wants $317,250 for special buildings and improvements, and $265,000 for support. Salaries are not included in the report.

San Francisco State Normal wants $368,800 for support, and special appropriations; San Jose State Normal, $342,500; San Diego State Normal, $162,350, and Chico State Normal, $111,700, makin a total of $975,350.

Sacramento Atelier

A meeting of all the Sacramento architectural draftsmen was held recently for the purpose of organizing an "Atelier."

Fred S. Harrison, of the firm of Cuff & Diggs, architects, was elected the massier (president and treasurer) and E. J. Seadler, of Seadler & Hoen, architects, the sous massier (vice-president and secretary).

George C. Sellon, architect, has been asked for his services as patron, which he has granted and has given to the Atelier members the use of his offices for their rooms.

Bank Building

Architect Charles S. Kaiser of San Francisco, has prepared plans for a five story reinforced concrete bank building to be erected at Sacramento for the Capital National Bank of which Alden Anderson is the president. The Ransome Concrete Company will erect the building, which will cost $150,000.

The Sather Campanile

A site upon which to build a magnificent campanile on the campus of the University of California, provided for by the will of Mrs. Jane E. Sather, is soon to be selected. The design, made by John Galen Howard, has been accepted by the university authorities. The sum available is $225,000.

The structure will be 300 feet in height. The dimensions at the base will be 36 by 36 feet, tapering slightly to the top. It is estimated that the cost of the tower will be $200,000, while $25,000 will be expended for the chimes. The tower will be graceful in design and imposing in its exterior, which will be of white granite. No definite time has been set for breaking of the ground for this edifice, but it is believed that the ceremonies will take place some time early in 1913. The campanile will be completed by 1915.

Granted State Certificates to Practice Architecture

The following is a list of candidates who received certificates during the past three months: Ernest Coxhead, Almeric Coxhead, William T. Banker, B. Marcus Priteca, James W. Plachek, Charles H. Cheney, John H. Powers, Joseph J. Rankin and Abe Appleton, all of San Francisco.

Opens Los Angeles Office

Architect Leonard L. Jones, formerly of San Francisco, where he practiced his profession for four years, has opened offices at 235-6 I. W. Hellman building, Los Angeles. Mr. Jones designed the Coliseum building, several structures for the Crocker estate and a number of other creditable buildings in San Francisco. He has two buildings under construction in Los Angeles and is working on plans for a four-story rooming house and three apartment houses.

Meeting of Architectural Association

A regular meeting of the San Diego Architectural Association was held on Monday evening, Oct. 7th, and a large attendance was noted. Matters of interest to the profession were discussed and ways and means planned for bettering the existing conditions of the architects of San Diego. The following architects were elected to membership: Eugene M. Hoffman, Edwin T. Banning, D. H. Holmes and L. T. Bristow.

Concrete Slabs for Road Work

T. E. Risley, assistant city engineer of Oakland, having charge of waterfront improvement, has designed a reinforced concrete roadway along the Quay Wharf near the old Pacific Steel and Wire Works in East Oakland.

This roadway will consist of a six inch concrete slab, over a compacted foundation, the slab being reinforced with one layer of Style No. 28 Triangle Mesh Fabric. The roadway is over an unstable sub-grade, which accounts for the reinforced slabs being adopted for this work.

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FAIR TO EMBODY WONDERFUL COLOR SCHEME

The architectural scheme of the Panama Exposition is to be Italian and Spanish, especially the latter. Instead of the pure white buildings which have characterized various other expositions, the fair at San Francisco will be a vision of gold, red, blue and yellow. Jules Guerin, the well-known artist, is the director of color and decoration for the exposition, and his explanation of the choice of style is both soundly convincing and interesting, while the picture which he draws of the exposition as it will be when finished is alluring. To an interviewer in New York Mr. Guerin said:

Both the climate and the topography and vegetation of the hills that surround the exposition site remind one of Italy, Greece and Spain. To build a white exposition in such a setting would be out of harmony. Instead, the architectural commission decided to adopt Spanish and Italian schemes throughout. Even when classical architecture is used the white of the columns will be toned down and a soft colored background provided. The festal court, where the big pageants will be held, will be wholly Spanish Renaissance in style and coloring. The walls will have a solid Spanish appearance and the coloring will be gold, red, blue and yellow. From the surrounding hills the Panama exposition will be as beautiful as a glimpse of fairyland. The color of the roofs will tone down the white of the columns, and the dark green eucalyptus trees and the mirror-like surface of the lakes will add to the general effect. When a building is good it is better by reflection, so the architectural commission has used water wherever it was possible to get an effect. The color scheme will extend even to the walks. At Chicago the glittering cement and the gravel made it unpleasant both for eye and foot. At San Francisco light yellow bricks will be used for the walks.

A NEW WRINKLE IN BUILDING.

The following telegraphic dispatch printed in the San Francisco Chronicle, opens up new possibilities in building development.

MONTEREY, November 2.—The Underwood apartment house, the first building of the kind in Monterey, erected at a cost of $40,000, by Alex. R. Underwood, was dedicated this afternoon. Congressman E. A. Hayes made the dedicatory address, the mayor of the city, Carmel Martin, and Judge B. V. Sargent following with brief speeches. Father Mestres, pastor of San Carlos Church offered a blessing, and J. Miles Webb, chaplain at Monterey Presidio, pronounced the benediction.

Miss Antonette Field, daughter of T. J. Field the banker, christened the building when the Underwood pennant was thrown to the ocean breeze. Selections were rendered during the ceremony by the Twelfth Infantry Band.

We shall expect that this new order of things will add materially to the labors of the city clergymen who may be called upon to offer prayers and pronounce benedictions over each new hotel and apartment house which opens its doors for patronage. Also, the daughters of local bankers and politicians, and dealers in champagne, will be interested in these christening services.

How far the architect and contractor will be expected to figure in these celebrations one cannot foretell, but we have endeavored in vain to secure a photograph of Brother Weeks and Brother Trost standing with bowed heads in a circle composed of congressmen, mayors, clergymen, bankers, etc., while the work of their hands and brain was consecrated to eating and rooming house purposes.

Observations

By BILL WISE

The Sage of Greystone

Certainly George Gray of the Western Development Syndicate has stirred up Street Superintendent McCoy and the Board of Supervisors in refusing to replace rock which had been condemned with that of a better quality. Superintendent McCoy urges that the contract with Gray & Pratt be cancelled as they have not treated the city fairly in the matter and compelled the street repair department to secure rock from other sources (to replace the condemned material) at an increased price.

* * *

Plumbers Could Furnish Vacuum Cleaners

The policy of confining the plumbers to the piping for the vacuum cleaner and then permitting others to purchase and connect the machines is being departed from in the East. There the plumber is contracting for the entire outfit. If a concerted effort was made there is no doubt but what the vacuum cleaner could be included in the plumbers' specifications in the original bids.

* * *

A Good Hint, by George!

The Railroad Commission, in ordering a lowering of rates of from 10 to 20 per cent to the Cowell Company on cement shipped over the Santa Fé and Southern Pacific Railroads, includes the following recommendation:

"At the same time the commission has recommended to the cement companies that if the railroads grant these reductions they should be reflected in a cut in the price of cement at all points affected. The points to be chiefly affected will be all cities of the San Joaquin Valley. The rates recommended by the commission include reductions for main line points, such as Bakersfield, Fresno, and hundreds of other localities throughout the San Joaquin Valley."

A very good recommendation but there is little likelihood of the Cowell Company making any reductions unless forced to do so. The recent experiences of the state officials with this concern is a sufficient indication of its policy in the matter of price discrimination.

* * *

Will the Moore Shack Be Removed?

Twenty warrants of arrest were recently issued against owners of shacks who had disregarded the ordinance requiring their removal. Also, the shacks occupied by the city since 1906 for street bureaus and shops have been ordered torn down. It is certainly time now for C. C. Moore & Co. to yield to public sentiment and pull down that one story temporary structure which stands at First and Mission streets as an eye-sore and disgrace to the down-town district.

* * *

Sailing Under False Colors

My recent criticism of a large wholesale plumbing concern of San Francisco who solicits the plumbers' trade most zealously and at the same time competes with them most unfairly through a retail business which they own, has elicited expressions of warm approval from material men, contractors, etc. A contrast to this policy is that of Mark-Lally Co., who recently acquired the Oakland business of P. F. Howard Co. and immediately changed to their own name, running it as one of their branch houses, of which they have four, the others being located at Stockton, Fresno and San José.

* * *

Grand Jury Should Smash This Trust

A grand jury impaneled at Sacramento is hot after the so-called Contractors' and Dealers' Association of that city, for alleged violation of the anti-trust law. The members of the organization would build a high wall around the Capital city and keep out competition. They would drive out building material concerns that have no established business in the town, also plumbing houses and contractors. A mass of evidence has been presented to the Grand Jury since the matter was taken up, and it is expected that indictments will be returned.

Since William G. Wood, President of the Wood-Tatum Real Estate Company, made charges against the association, several contractors and others engaged in the building business have volunteered to testify regarding the trust methods employed by the organization.

The trust ought to be broken up!

State, County and Municipal Engineering

Good Roads—Water—Sewers
—Bridges—Fire Protection

Roads Yesterday, Today and Tomorrow.

MR. HORACE S. EARLE, former Highway Commissioner of Michigan, has contributed to Southern Good Roads the following:

"The country road which was good enough yesterday for the horse, laden with the farmer and his grain bag, with the grist in one end and a stone in the other, has gone with yesterday and yesterday's farmers and yesterday's ways—highways and low-ways—are gone forever.

"Yesterday the road past his farm belonged to the farmer, but today it belongs to the county or state, and tomorrow it will belong to the United States, with an invitation to the world to use it.

"Yesterday's road was poor because yesterday's people were poor. They had a wilderness to penetrate, the stumps and roots to obliterate, the turf of a million years to plow and cultivate, so how could they make good roads? There was no time to build good roads; there was no money to pay for good roads; there was no commerce requiring good roads, so no good roads were built.

"They built as good roads as they needed, and it would be foolish for any generation to build better roads than are required at the time of building, for no man knows what tomorrow has in store for us. Perhaps railroads and highways will pass out of use, the rights of way be tilled and the produce of the future be carried to markets in combination air and water craft However, this will not happen in our day, so it is up to us to do as well for this generation as yesterday's people did for themselves.

"Today we have enormous cities to feed, villages everywhere growing into cities, and today's demand is for roads that will permit a four-ton load to be hauled twenty miles to town before breakfast. Milk must be brought fifty to one hundred miles. Railroads cannot be built past every farm, but good roads can be built where traffic is not sufficient to demand railroads and yet is enough to warrant good roads.

"Every citizen traveling in an automobile or hauling with a motor truck has as good a right to be served with a road for his machine today as had the man on horseback three hundred years ago, and yesterday's road will not answer the purpose.

"Today demands more miles of well-graded and properly drained earth roads than of any other kind. Today demands thousands of miles of well-built gravel roads. Today demands more miles of common water-bound macadam road than has ever yet been built. Today the half million automobiles and motor trucks demand that near all cities the surface of the road shall be so hard, so smooth and so welded together with cement, bitumen or something as good or better, that the wheels shall not pull the road to pieces or suck out the binder which holds it together."

Benefits of Good Roads

W. E. Voorhees

THE benefits of good roads are incalculable. There never was a good road built at any figure (and some of them cost more than is necessary) that did not pay a good dividend on the investment. Good roads pay and pay well; they decrease the cost of transporting farm produce from the farm to the railroad, lighten the burdens of the farmer, make him more happy and cheerful (imagine, if you can, a man crawling through muddy roads at a snail's pace, and looking cheerful) and open up tremendous possibilities for social intercourse and improvement.

You may say that this looks all very well on paper; that it is a very pretty bit of theory, but it will not work out in practice. I answer in the language of the old saw, "what man has done, man can do." The conditions which now exist in this country as respects its public roads are the same as those which have been met and overcome in every other civilized country in the world. A century ago the public roads in Great Britain

were as bad, if not worse, than they are in this country, yet the United Kingdom was a rich and powerful nation at that time as she is today; as soon as her people became thoroughly aroused as to the necessity of good roads they were built, and today the finest roads in the world are to be found in the "tight little island." Let us see what Lord Macauley, the eminent writer and historian, says with reference to the roads in England before the time of Macadam:

"The chief cause which made the fusion of the different elements of society so imperfect was the extreme difficulty which our ancestors found in passing from place to place. Of all inventions, the alphabet and printing press alone excepted, those inventions which abridge distance have done most for the civilization of our species. Every improvement of the means of locomotion benefits mankind morally, and intellectually, as well as materially, and not only facilitates the exchange of the various productions of nature and art, but tends to remove national and provincial antipathies and to bind together all the branches of the great human family.

"It was by the highways that both travelers and goods generally passed from place to place; and those highways appear to have been far worse than might have been expected from the degree of wealth and civilization which the nation had even then attained. On the best line of communication the ruts were deep, the descents precipitous, and the way often such as it was hardly possible to distinguish, in the dark, from the unenclosed heath and fen which lay on both sides. It was only in fine weather that the whole breadth of the road was available for wheeled vehicles; often the mud lay deep on the right and the left, and only a narrow track of firm ground rose above the quagmire.

"The markets were often inaccessible during several months. It is said that the fruits of the earth were sometimes suffered to rot in one place, while in another place—distant only a few miles—the supply fell short of the demand."

Who will say that this vivid picture of the highways in England a century ago is not also, in a large measure, at least, a good picture of the condition of the roads in many sections of this rich and powerful country of ours today. Our roads in the main are miserable; every man of sense and judgment must admit it. They are bad simply and solely because we as a people have not given sufficient thought to their improvement. "Men do more things from custom than from reason." We follow along in the same old rut year after year, building our roads as our fathers did before us, and what is the result? Dry dust in the summer, and mirey mud in the winter, interspersed with chuck holes and ruts.

Direction Signal for Fire Apparatus

Ever since the introduction of the silent alarm system in Baltimore the problem that has confronted the police of the traffic squad has been to determine, on sighting the fire engines, whether the engines would go straight on a street or turn out at any particular intersection. In the congested section of the city the keeping of a clear way for the fire apparatus was thus rendered more difficult until one of the engineers of the Baltimore fire department invented the signal apparatus which is shown in the accompanying picture.

The signal, which is being tried out on one of the high pressure automobile hose wagons, consists of a large red and white striped paddle and is operated by the man who sits beside the driver of the machine and who also sounds the alarm bell. If the machine is going straight across any intersecting streets then the paddle remains upright, but if it is proposed to turn either to left or right, the paddle is lowered to the side to which the turn will be made.

As it is possible for a policeman to see the paddle at a distance of a city block he has ample time to clear the way in the necessary direction. Although the signal system has been in use but a few weeks, it has proven so satisfactory that all of the apparatus of the department will be equipped with it.

As this is the only signal apparatus of its kind in the country it is probable that other cities will investigate its worth with a view to adopting something of a similar nature.

The Growth of Ornamental Street Lighting

By S. G. Hibben, In Good Lighting

IT is often interesting to pause for comprehensive views of certain movements and to contemplate the extent and the growth of novel departures from the beaten paths of doing things; for the measure of the stability and popularity, or, what amounts to the same thing, the success of any movement, is incontrovertibly shown by just such extent and growth. For such a reason this brief survey of the status of ornamental tungsten street lighting is given. So much has been written concerning this method of lighting business thoroughfares, and about "Gay White Ways" springing up here and there throughout the country, that the question has become more and more worthy of a general survey. The movement for such lighting might still be considered a novel departure in street equipment, but, though novel, yet it is certainly not untried, as can be seen from the number of cities where such systems are in operation.

There are two hundred and twenty tungsten street light installations, counting the cities in the United States and Canada, and a few insular cities. There may be several more which have unintentionally been overlooked, or are so recent as to have been omitted from this article

In retrospect it is probably safe to say that there were not fifty of the strictly ornamental tungsten street lighting installations one year ago. This is considering, of course, only such systems as consist of one or a cluster of filament lamps and equipment, supported on posts constructed entirely for that purpose, and distinct from decorative arches, festoons and accessories like arc or electrode lamps. Certainly two hundred of these lighting systems have become operative within the last two years. Shortly previous to that time the available street lighting equipment was constantly changing, as certain new types of flame and luminous arc lamps were placed on the market, and as the tungsten lamps were being perfected. These changes undoubtedly tended toward the awakening of new ideas for street lighting and decoration. These new ideas were directed toward giving broader scope to the possibilities latent in business street lighting equipments. Whereas street "lighting" had meant an expenditure for the largest measurable amount of light directed upon the roadway, it now came to mean an investment for attractiveness and trade benefits as well.

With a total of over two hundred installations, the increase this last year amounted to, roughly, 300 per cent. Granting this same rate of growth to hold good for two summers to come—not an especially optimistic prediction—we would expect this tungsten lighting system to have been extended to at least fifteen hundred American communities by 1914.

As to geographical location, the eastern central section of the country can boast the majority of such attractively lighted business streets. This is to be expected on account of this section being a thickly populated one. But in the New England and far eastern states, even though quite as well populated, there are found fewer such cities. The condition is explained by knowing that the eastern cities have been the first to need street lighting and have previously given thought to it. Therefore in them we find installations that were the best when first made, and even though not the best today, yet have not become inadequate nor obsolete to the point of being abandoned in favor of the tungsten system.

The most rapid growth of ornamental lighting is predicted to come in the West. New centers of population will become established there, and in these smaller growing towns an installation will mean but the first cost rather than a more expensive replacement of an existing system and a scrapping of present equipment.

Surely a brief contemplation of the sturdy growth of the ornamental street lighting makes clear the impossibility of this idea being a passing whim or a temporary caprice. And truly the strong intrenchment of ornamental lighting in progressive and deliberating communities proves that the system is not one that has been promoted and fostered for the sole purpose of exploiting manufacturers' wares.

The next step may be a change in the form of light-giving source. Tungsten lamps may be supplemented by lower power-consuming arc lamps whose intrinsic brilliancy or glare will be less than at present But whatever the character of the source, the general idea has come to stay, for we have only to note the growth of the ornamental tungsten system and be convinced of its efficacy Indeed, "Nothing succeeds like success."

Concrete Elevators

"Concrete in Grain Elevator Construction" is the title of a new pamphlet issued by the Universal Portland Cement Company The work is illustrated by views of a number of reinforced concrete

grain elevators and warehouses and the text is devoted to a discussion of the following topics: First Cost, Depreciation, Insurance (Building-Contents), Vermin Losses, Fire Protection, Business Insurance and Conclusion. The conclusion is recited in the following extract from the work:

"It can readily be seen that in a period of from four years as a minimum to eight years as a maximum, with figures based on the above, the concrete construction has paid for the difference in cost, and at the end of that period the money that would each year be sunk in depreciation and insurance, the dealer can then charge up to the credit sheet in his ledger. This sum, amounting to about $500 per annum, would materially assist in showing a handsome profit in his business. This is not all. He has a building which has grown better and stronger as the years have passed, and to which he can economically make such additions as the growth of his business warrants."

Building Gravel Depot

The California Building Material Company, Pacific building, San Francisco, distributors of Niles washed gravel and rock, are erecting a distributing depot at the Quartermasters' Spur, foot of Van Ness avenue, San Francisco, and will carry from 4,000 to 5,000 tons of material in the bunkers there. Considerable machinery is to be installed, including hoisting apparatus, derrick, buckets, etc. The company expects to be able to handle 400 or 500 loads a day of crushed rock and gravel which will be delivered to the local consumers by automobile truck.

Hillside Residence

Architect C. W. McCall of Oakland has completed drawings for a picturesque hillside residence to be erected in Piedmont Heights, Oakland, for Dr. J. B. N. Clow of that city.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.

(Required by the Act of Congress, August 24, 1912.)

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Subscribed and Sworn to before me this Eighteenth day of October, 1912.

SEAL

SID S. PALMER,
Notary public in and for the City and County of San Francisco, State of California.

ANNOUNCEMENT

A CONSOLIDATION HAS BEEN EFFECTED BETWEEN ADAMS AND HOLLOPETER OF SEVEN FORTY-FIVE MISSION STREET AND FOWLER MALLETT OF THREE FIFTY-THREE SUTTER STREET, KNOWN AS

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Plans Completed for San Francisco Sub-Treasury Building

CONTRACTORS are figuring the plans for the new Sub-Treasury building to be erected at Pine and Sansome streets, San Francisco. Milton J. Dyer of Cleveland, is the architect and the drawings have the approval of the supervising architect of the Treasury, Oscar Wendreth.

Bids will be opened at Washington, January 6th. Soon after this date the contract will be awarded, and, according to officials at the Treasury, construction of the building should be started by February 1st next.

The building will cost approximately $500,000 exclusive of the site, which cost $375,000. The total appropriation by Congress for the site and building was $875,000.

The new building will have a ground area of 85x128 feet, with the main front on Pine street. It will be two stories and basement, and it is designed in the classic style of architecture, using granite for the exterior material. The entire building is solely for use of the Sub-Treasury.

The main entrance will be emphasized by a beautiful classic colonnade, opening into the public banking-room, separted from the working space by a suitable bank screen of glass and metal. The banking-room will be about thirty-seven feet high, the ceiling being largely taken up by an ornamental ceiling light, an arrangement in accordance with the plans adopted in the most modern banks. Offices of the assistant treasurer open directly from the public banking-room, as do also those of the paymaster.

A large storage vault in the basement is supplemented by a daily money vault on the first floor. On the second floor general offices are arranged, reached by an independent exterior entrance on Sansome street. Special provision is made in the designing of the vaults, while all the mechanical equipment, such as heating, ventilation, plumbing, etc., will correspond with the best architectural practice.

The Way to Place Figures on a Drawing

At a recent meeting of the American Society of Engineer Draftsmen held in the Engineering Societies building in West 39th street, New York City, Professor Charles W. Weick, of Columbia University, gave a most interesting lecture on "Practical Perspective" which aroused much interest and drew out many subsequent questions.

One of the questions asked through the "Question Box" was, Which is the better way to place figures on a drawing —perpendicular to the bottom of the drawing, or perpendicular to the dimension line?

This created considerable discussion and the consensus of opinion seemed to carry the view that perpendicular to the dimension line is the popular method of placing the figures.

Expansion

The Enterprise Foundry Company (machine shop, only), the manufacturers of the Enterprise Planetary Mixer, has removed its plant from Second street to South San Francisco. The office and salesroom will continue to be at 200 Second street, corner of Howard, San Francisco.

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HEATING AND LIGHTING

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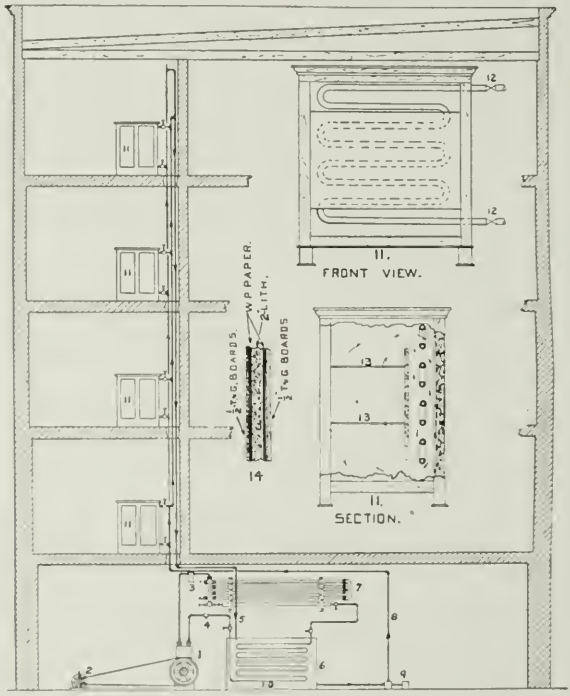
Refrigeration for Apartment Houses.

A method used for supplying refrigeration in an apartment from a central plant in the basement is illustrated in the accompanying drawing of a typical installation. It will be noted that four apartment house refrigerators are located directly above each other on the four floors, these boxes being cooled by the circulation of cold brine. This brine is taken from the tank which is located in the basement, by means of a circulating pump and circulated through risers to the different boxes on the floors above, each box having separate connections with regulating valves, so that the same can be cut in and out of service, the brine after passing through the coils returning direct to the tank.



1-COMPRESSOR.
2-MOTOR.
3-OIL TRAP.
4-SCALE TRAP.
5-BRINE RETURN.
6-BRINE TANK.
7-AMMONIA CONDENSER.
8-BRINE FEED TO BOXES.
9-BRINE PUMP.
10-DIRECT EXPANSION COIL
11-REFRIGERATORS.
12 VALVES.
13 GALV. WIRE SHELVES.
14 DETAIL OF INSULATION

Usually the ammonia compressor is operated by an electric motor, and in the brine tank there is placed a certain amount of direct expansion ammonia coils which are used for cooling the

brine. The liquid ammonia is allowed to enter these coils through an expansion valve, this valve being similar to a needle valve.

The pressure in the expansion coils is usually kept at about 15 lbs. The liquid ammonia extends in these coils and is taken by the compressor and compressed into the ammonia condenser. The ammonia condenser as shown is of the double pipe pattern and made of 2-in. and 1¼-in. pipe.

The cooling water which is used for re-liquefying the ammonia gas passes through the 1¼-in. pipe of the condenser, and the ammonia gas coming from the compressor at a pressure of about 150 to 170 lbs. travels between the 1¼-in. pipe and the 2-in. pipe. The effect of the cooling water, and the pressure that is on the gas causes this gas to liquefy and return into a liquid receiver which is placed at the bottom of the condenser. From this liquid receiver the ammonia liquid passes to the expansion valve again and is allowed to expand from liquid into gas, at which time it cools the brine and is taken by the compressor again and forced into the ammonia condenser. This is similar to the action of ammonia in a refrigerating plant.

With this construction the refrigerating machine can be operated two or three hours in the morning, and the same at night, and, while the refrigerating machine is shut down, the brine pump can be kept in operation circulating the cold brine from the tank through the boxes. In this way a steady temperature is assured in all of the boxes without the refrigeration machine being kept continually in operation.

The system eliminates installing any brine tanks in the refrigerators. All that is necessary are the brine coils which are shown in the sectional view. The ca-

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pacity of the machine required for an apartment house is governed by the number of refrigerators that are to be cooled, and the size of the same. Another feature that can be added to this system is an ice making apparatus. To add this to the plant all that is necessary is to place the ice making cans in the brine tank in the basement, and in this way a certain amount of ice can be manufactured, if desired.

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Few persons realize that San Francisco enjoys the distinction of having within its limits the most modern manufacturing plant in the world devoted to the production of advanced and highly perfected methods for the burning of crude oil as fuel.

While the extreme cheapness of California fuel oil is well known, no doubt due to this fact it has never been considered of any great importance until the last few years to improve the method of introducing it in fire boxes.

This line of development was found necessary owing to the destructive effects on the boilers in general and especially the sound of combustion making it impractical as a universal fuel in apartment houses and especially in large residences and as a result, the Fess System of Rotary Crude Oil Burners has been perfected and put on the market with such success that a great many of the most prominent homes in San Francisco and vicinity as well as Southern California are equipped with this method of heating.

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Results obtained after a test of over one year where this method replaced coal, demonstrates a saving as high as 76% and another very important feature is the lack of noise resulting from the use of the equipment. The importance of this feature may be judged from the fact that this system has displaced compressor equipments in the leading Los Angeles buildings, which were only in use about six months prior to the introduction of this method in that district.

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By the Way

Some Industrial Information Worth the While

A New Composition Tile

The "Indestructible" is the name and it tells the story of the new flooring and tile which is now being introduced for the first time to the architects and contractors of the Pacific Coast. It is strictly a home product, its inventor being a Californian and its factory located in San Francisco. It is said to be stronger than any of the existing tiles and has, moreover, waterproof and fireproof qualities to commend it.

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It lends itself easily to decoration, and can be applied to wood, steel or concrete with equal firmness. Samples will be sent to any architect upon request. The offices of the Indestructible Floor Tiling Co. are at 251 Kearny street, San Francisco. R. T. Brown is the president; Wm Inglis, secretary and H. L. Black, manager

Ward & Goodwin, Contractors

Among the prominent contractors who have been very successful in their work for Architects Ross and Burgren, are Messrs. Ward & Goodwin, who make their headquarters with the General Contractors' Association, at 402 Kearny street, San Francisco. Mr. P. R. Ward is the senior member of the firm and Mr. T. B. Goodwin is the junior member Before forming a partnership which has existed since the fire and which has been marked by complete harmony, both Mr Ward and Mr. Goodwin were engaged in the building business for 25 years. They were in the employ of other firms and assisted in erecting some of the very early buildings of prominence in San Francisco. Under the name of Ward & Goodwin quite a little work has been done for Thos. Magee & Sons; a church has been built in the Homestead District; a $15,000 addition has been erected to the St. James' School, the latter having been finished in the remarkable time

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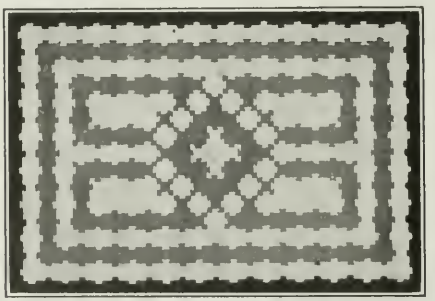

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of 40 working days; a modern hotel was erected for the Sullivan Estate Co. at Sixth and Mission streets; also the Hotel Potter for the Dimond Estate at Ninth and Mission; Hotel Panama at Fourth and Howard streets; $50,000 church for St. Vincent's Catholic Parish at Green and Steiner streets; Master Plumbers' Association building, at Page and Gough streets and three large buildings for the Pioneer Furniture Company, costing over $150,000 and covering an entire block bounded by Stockton street and Broadway.

Son Succeeds to Business

Wm. F. Wilson, who recently passed away, had an honorable record of a quarter of a century in the San Francisco business world and his work in plumbing lines is in evidence in many of the leading buildings in this vicinity. His son Frederick A. Wilson, will, it is understood, succeed to the presidency of Wm. F. Wilson Company, of which he has long been secretary and treasurer.

The Wm. F. Wilson Company have just completed their new store building at O'Farrell and Mason streets, San Francisco, which was a pet project of the deceased, and it is to be regretted that he will not be permitted to enjoy the comforts of same.

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"Hydro-Electric Practice"

Preface to Second Edition—The fact that the first edition of this treatise was exhausted in eight months is proof of an existing demand for it which exceeds any expectation of the author and which prompts him to send forth this second revised edition.

The revision consists mainly of a detailed treatment of the market, flow discussion, pondage, and storage in Part I.; of development scope and equipment in Part II.; and of Part III. "Operating and Maintaining the Plant." The tables of rivers' drainage areas and low run-off, of navigable rivers, and the forms of Government permits and licenses have been taken out to make room for the above more valuable matter and because this information may now be readily obtained from Government publications.

No corrections have been made in cost estimates of works, equipment, and operation; those given are approximately correct for the conditions prevailing in the United States during 1907. The reader can readily make the proper allowances for changes in prices of materials and labor. The same holds good for quotations of current values.

In its revised condition "Hydro-Electric Practice" is now presented anew in what is believed to be a more complete and useful treatment.

This book is published by the J. B. Lippincott Company, Washington Square, Philadelphia, Pa.

J-M Waterproofing Department

The importance attached to that branch of engineering which deals with the waterproofing of building construction has become so great as to justify one of the largest manufacturers in this line—the H. W. Johns-Manville Co.—to establish and devote a special department to it.

It is expected that this new department will be of great assistance and value to architects, engineers and others directly or indirectly interested in the matter but who do not possess that intimate knowledge of the subject necessary to secure the best results either for themselves or their clients.

Mr. W. H. Lawrence, generally recognized as one of the best and most expert waterproofing engineers in the country, will be in charge. He has had a long, practical experience and is thus able to intelligently consult with architects and engineers as to the best method of applying waterproofing and mastic materials for all purposes.

Among these materials manufactured by the H. W. Johns-Manville Co., are the following:

J-M Mastic
" " Mastic Flux, Hard
" " Mastic Flux, Soft
" " Waterproofing Cement
" " Liquid Waterproofing Cement
" " Asbestos Waterproofing Felt
" " Asphalt Saturated Felt
" " Waterproof Fabric
" " Concrete Primer
" " Plaster Bond
" " Cut-Stone Backing

The H. W. Johns-Manville Co. maintain branch offices in all the principal cities of the United States and Canada, and are in position to promptly supply materials anywhere for waterproofing residences, business structures, bridges, abutments, etc., as well as mastic for floors in breweries, abbatoirs, factories, reservoirs, etc. The organization of the new department is such that contracts may be taken for the application of these materials and for the satisfactory completion of any waterproofing problem irrespective of its nature.

San Francisco, Cal., Dec. 8, 1910

Board of State Harbor Commissioners,
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New Firm Secures Important Agency

M. H. Dodge and W. McClenahan, formerly associated with the H. W. Johns-Manville Company, have formed a partnership under the name of Dodge & McClenahan and have offices at 517-18-19 California building, Los Angeles.

The firm has secured the agency for southern California for the well-known Colonial wall board, manufactured by the Mound House Plaster Company of Emeryville. This is the board which has been specified for use in the Armory building and the State Hospital at Patton, as well as several other large Class A buildings to be erected in the near future.

The boards are made in but one size, 32″x36″x⅜″ thick, and are nailed direct to the wooden studding or rafters, and when applied and plastered according to specifications either for interior or exterior construction, the walls will be free from cracks and have a rigid and smooth surface.

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California Highway Bulletin

All who are interested in the progress of the state highway work under the $18,000,000 bond issue would do well to get their names on the mail list of the California Highway Commission for the California Highway Bulletin, a publication to be issued every other month by the commission. The first number of this bulletin has been distributed. It contains 16 pages, is illustrated with views of the work under way and sections of the state through which the highways will pass, and is filled with a fund of information, papers, documents and other data giving insight into the methods, aims and views of the commission which make it extremely valuable to every citizen of the state, especially to engineers and contractors whose work lies along this line. The foreword of the Bulletin states:

"Widespread interest in the state highway undertaking calls for the publication from time to time of a report from the California Highway Commission. Therefore, this Bulletin. It is a state document. Its purpose is to present authoritative reviews of the work accomplished and forecasts of the plans proposed by the Commission under the State Highways Act of 1909. The Commission plans to issue the Bulletin every two months. Copies will be mailed regularly to those interested."

Contractors' Notes

The electrical construction work on the new Wigwam Theater, at Twenty-second and Mission streets, San Francisco, has been awarded to the Central Electric Company for $3,500. Charles T. Phillips is the electrical engineer for the theater company.

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Building Activity in the Northwest

DESPITE the fact that the rainy season is here building activity in the Pacific Northwest is as lively as at any time during the spring and summer. In Vancouver, B. C., many public buildings are under way. The structure being built by the Norton Griffith Steel Construction Company for the Vancouver Club promises to be by far the most pretentious of its kind in that city. The building will cost $250,000. The theatre being built for Marriott & Fellows, on Pender street, will be a welcome innovation to the citizens of Vancouver. The structure will be four stories in height and will cost $300,000. The Mission for Seamen contemplates the building of a $60,000 home and a five-story, $150,000 theatre building is to be built on Granville street.

While the city of Portland is far ahead of any other city in the Northwest, with the exception of Vancouver, B. C., in the number and value of buildings erected during the past year, it is not doing as much, comparatively, in the building of theatres and halls. The University Club, which will cost about $175,000, at Sixth and Jefferson streets, Portland, is now under construction. Architect A. L. DuPuy has completed tentative plans for the three-story, $40,000 Business Men's Club to be erected between East Morrison and East Burnside streets. A new home for the Waverly Club will cost $50,000.

Victoria will have a theatre to be erected by Vancouver and Victoria capitalists at a cost of about $60,000. The Victoria Golf Club, also, plans extensive alterations to their club building.

Other cities in the Pacific Northwest are holding up their ends. A few of the most prominent follow: The $25,000 theatre to be built in North Yakima by Klaw & Erlanger; alterations to be made in the Beck Theatre, Bellingham, which represents the outlay of $6,000; $25,000 moving picture show house to be built in Walla Walla by the People's Amusement Co.; Y. M. C. A. building to be built at Harrison, Idaho; Labor Temple, to be built in Aberdeen at a cost of $15,000; $75,000 Y. M. C. A. in Wenatchee; $30,000 theatre to be built in Roseburg, Oregon, by the Provident Trust Company, Portland; Elks' Club building in Anacortes; the I. O. O. F. building at Pilot Rock, Oregon; the lodge building for the Red Men at Medford, Oregon, and a $50,000 club building to be built by the Tacoma Motor Club.

Architectural Sculpture

At 932 Vallejo street, San Francisco, are the show rooms of the Florentine Art Studio, under the direct management of Mr. G. Civale, an Italian sculptor of known artistic ability, and where are samples of careful and accurate work.

The Studio owns a large and most complete collection of plaster casts including exact reproductions of the world's famous and best modeling, both ancient and modern, also Florentine mosaics, portrait busts and work in death masks.

Another line in which the Studio is taking the lead is in the making of the most pleasing and artistic garden and hall furniure in either marble or Pompeiian stone.

In connection with the Studio is a workshop located at number 1644 Stockton street. There conscientious craftsmen are actually putting life into stone. It is fitted up with the latest pneumatic appliances.

New Data on Pipe Insulation

For the information of architects and others interested in securing a cheap and efficient form of insulation for cold-water pipes the following results obtained from tests recently made by Professor Charles L. Norton of the Massachusetts Institute of Technology should prove valuable.

Professor Norton measured the heat transmitted through J-M Anti-Sweat Pipe Covering of 1 inch thickness and 1½ inch thickness, respectively; also through 2½ inch thick J-M Special Built-Up Frost-Proof Covering.

The heat transmission through the 1 in. J-M Anti-Sweat Covering was found to be 0.008 B.T.U. per degree, per square foot, per minute. The transmission through the J-M Anti-Sweat Covering 1½ inches thick 0.007 B.T.U. per degree, per square foot, per minute, and through the J-M Special Built-Up Frost-Proof Covering 0.0037 B.T.U. per degree, per square foot, per minute.

These tests show that J-M Anti-Sweat Pipe Covering 1 in. thick is perfectly satisfactory for preventing outside cold-water pipes from sweating and for covering refrigerated drinking water lines; also that when these lines pass through heated rooms the 1½ in. material will give excellent results. For protection from freezing in very low temperatures the results obtained from the J-M Special Built-Up Frost-Proof Covering prove that it possesses the highest degree of efficiency with the greatest economy of cost.

All of the pipe covering materials mentioned in this article are made by the H. W. Johns-Manville Co., New York City.

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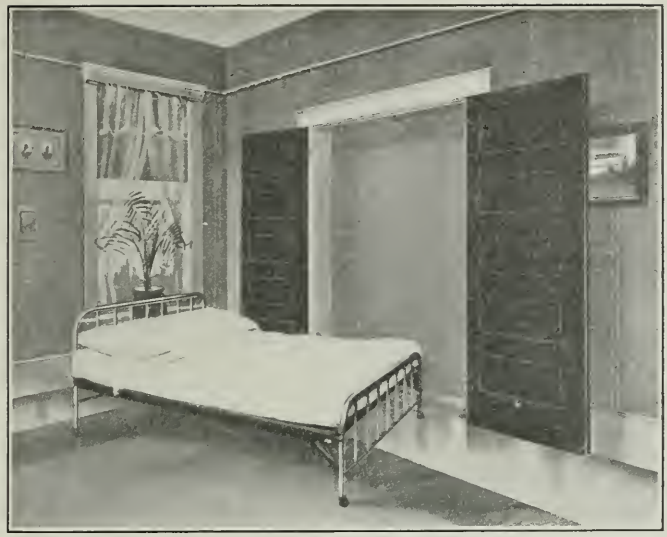

Showing the Ideal Disappearing Bed Down

An Ideal Disappearing Bed

ALMOST every month a disappearing bed appears on the market. Many are called, but few are chosen, yet those that have withstood the criticism of the architects and owners have been reaping a harvest during the enormous building operations of the past six months. The standard bed of the Ideal Disappearing Wall Bed Co., 1010 Phelan building, San Francisco, has met with the approval of the trade and on account of its many novel features and points of superiority is being adopted by many of the architects and owners of the Pacific Coast.

The makers claim that with their bed there is a saving of floor space equal to $26 on each bed and as space is the one big consideration in modern building, this is an important item. The fact that only nine inches of wall depth is required to store the bed during the day is the attractive feature and the economy of such an arrangement is another. This bed, the makers say, should appeal to owners of old buildings as well as to those who contemplate the erection of apartment houses, hotels, etc. Among some of the claims of the manufacturers are the following taken from an attractively illustrated catalogue which is sent on request:

First—The Ideal requires a space only nine inches deep in which to be installed.

Second—The cost of bed and installation is greatly reduced.

Third—The Ideal economizes space, money, time and labor.

Fourth—No weight or counter-balance is used in operating The Ideal.

Fifth—The Ideal is movable to any part of the room or house.

Sixth—The Ideal is built entirely of metal and is sanitary in every respect.

Seventh—Any ventilating system can be used in the installation if desired.

Eighth—The Ideal can be furnished in any finish desired, Vernis Martin, Brass or Enamel.

Ninth—The Ideal needs no false furniture to conceal it.

Tenth—The Ideal can be used indoors or upon a sleeping porch without change of installation.

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Water Heating by Garbage Burning

RECENT inquiries among the plumbing and steam fitting trade reveal the fact that but few plumbers and steam fitters are aware of the opportunity that awaits them for increasing their business through the sale and installation of garbage-burning water heaters and refuse incinerators. Accordingly some information has been gathered on the economy that some building owners are enjoying as a result of using what is ordinarily waste material as fuel in a garbage-burning heater for supplying hot water to their tenants. The use of the incinerator as a means of destroying garbage, refuse and the like from houses which are not served by a sewage disposal or garbage collection system is becoming quite general. The demand for the incinerator to prevent fires by the ready destruction of litter in business houses, office, shipping rooms and the like appeals to those who have studied the situation.

Probably no other country in the world could go on year after year suffering the enormous fire losses that the United States does and remain solvent. Had it not been for the marvelous development of our natural resources this fact would have been forcibly impressed on the taxpayer of the country long ago, for it must be remembered that every dollar's worth that is destroyed by fire is a total loss to the country. This state of affairs it would seem cannot go on much longer. The appalling annual fire loss of some $230,000,000 must be reduced and the reduction must come by prevention—not protection.

We spend more on fire protection per capita than any other civilized nation, but we are criminally lax in methods of prevention. Fireproof construction of buildings should be insisted upon in every section of the country and especially in congested districts, and a campaign of education on the ultimate cost to the people of buildings of this type would bring home to them the economy of adopting it. Meantime every known means of lessening fire risks should be made known and emphasized. The master plumbers and steam fitters can share in the work with profit to themselves and to the people at large.

One cause which has contributed largely to excessive fire losses in business sections of the cities is the accumulation of waste paper and inflammable packing materials in basements and store rooms. This practice has been condemned time and again by experts such as Fire Chiefs Kenlon and Croker, of New York City, and others who have had good cause to note the number of disastrous fires which have clearly originated in such places. Where the municipality provides good service in removing such waste material the practice of accumulating it is inexcusable, but means of disposing of it with ease and even at a profit are available, and there is now no reason to allow it to accumulate even in places where this service is not afforded.

The modern garbage and waste incinerators combine the function of destroying all waste matter which are capable of being destroyed by fire with that of heating water for domestic or manufacturing purposes. All garbage, waste paper, straw and other materials generally found in such accumulations as those referred to contain a large proportion of the elements which are found in the fuels commonly used for the production of heat in the ordinary form of water heating boiler, so that the utilization of the potential heat of the waste matter is only a question of ordinary economy. The master plumber or steam fitter may with profit to himself bring this home to his customers or possible customers. The reasons he can advance for the purchase of combination incinerators and water heaters can be put under four distinct and convincing heads—Economy, Efficiency, Safety and Sanitary Improvement.

The Kewance combined garbage burner and water heater is making itself known all over the country. Health boards and responsible architects see in it the most successful apparatus for the destruction of germ laden garbage. Numerous tests under actual working conditions, which vary considerably, show this sanitary device as practically without a limit, both as a garbage burner and a water heater. In numerous instances the reduction in cost of fuel for heating water is as much as 30 to 40 per cent. Quite a few users make the statement that they are furnishing all the hot water required by the occupants of their flat buildings and apartment houses at a cost of 5 cents per day per family. This sanitary device,

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like all Kewanee appliances is sold through the plumbing and steamfitting trade. The San Francisco distributor is the California Hydraulic Engineering and Supply Company of 70 Fremont street.

Demand for Skinner Engines

It will doubtless be of interest to local architects to note that the owners of the new Oregon Hotel at Portland, Ore., have recently placed an order with the Skinner Engine Company of Erie, Pa., for three of their Skinner engines to operate the generators for supplying light and power for this hotel.

Mr. F. Harvey Searight, 817 Shreve building, San Francisco, has recently acquired this agency in the California territory and already reports the sale of four Skinner engines of one hundred-and-twenty horse power each, to be used to operate generators supplying the power for the operation of the signals along the lines of the Southern Pacific Company in Nevada and Utah.

When one stops to consider that the Skinner Engine Company guarantees that their patent steam valve will remain tight for a period of five years, thus maintaining the economy of the engine for that period, it is readily understood why there is such a demand for these engines. There are three Skinner engines operating in the Alaska Commercial building, San Francisco.

In addition to the above account Mr. Searight is representing the E. Keeler Co. of Williamsport, Pa., builders of the Keeler water tube boilers; the Union Iron Works of Erie, Pa., manufacturers of the Union water tube boilers; the Wm. Bros Boiler and Manufacturing Company, builders of the well-known Bros. steam and hot water boilers.

He is also agent for the National Steam Pump Company of Upper Sandusky, Ohio, makers of the National pumps and air compressors and the Stewart Heater Co. of Buffalo, builders of the popular Otis feed water heaters.

Mr. Searight has been active in the local power field for the past fourteen years and is in position to co-operate with our local architects in the design and installation of their heating and power apparatus.

Plans Being Revised

Architects Reed & Meyer, Oakland Bank of Savings building, Oakland, announce that the plans for the seven story Thompson Estate building to be erected at Seventeenth street and San Pablo avenue, Oakland, are being revised and three more stories will be added, making the structure 10 stories with a frontage of 60 feet and depth of 100 feet. The building will contain stores, offices and lofts.

The same architects have prepared preliminary sketches for a 14 story Class A building to be erected at the corner of Fifteenth street and San Pablo avenue for the Dunn Estate.

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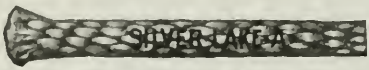

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Los Angeles Pressed Brick Co. Fairly Swamped With Orders

Among recent large sales of enameled face brick which the Los Angeles Pressed Brick Company has made are the following: White enamel brick for the seven-story Fox Hotel building at Venice; ivory enamel for the Whittier Savings Bank; ivory enamel for the light court of the Van Nuys building, Seventh and Spring streets; white enamel for the Oakland City Hall; a large shipment of ivory enamel brick for State buildings at San Quentin; face brick for the thirteen-story Washington Fireproof Building Company's building at Third and Spring streets, Los Angeles; cream mat for facing the branch City Library on Forty-eighth street; cream transparent for a pretentious residence being erected for J. A. Hill at Wilshire and Westmoreland; ivory enamel for a fine residence for Mr. Wilson at Santa Monica, all four sides being faced with this brick; cream transparent for facing the four-story hotel and an adjoining structure at Eighth and Flower streets; white enamel for the twelve-story Marsh and Strong building at Ninth and Spring streets; ivory enamel for the Hallingsworth building at Sixth and Hill streets Spanish tile for the Memorial Church at Stanford University; ivory enamel for the Black building, Fourth and Hill streets, Los Angeles; the H. Stanley Benedick building on West Lake avenue near Seventh street; buff pressed brick for the Anderson apartments at Forty-eighth and Main streets; red ruffled brick for the apartment building at Eleventh and Lake streets; white enamel with green trim for the Sherman-Bundy building in Santa Monica canyon; cream pressed brick with gray trim for the Bernheim building at Tenth and Figueroa streets; cream pressed with old gold trim for the Maidenberg apartments at Burlington and Orange streets; ivory pressed brick for Dr Moore building on Bixel near Seventh street; gray ruffled brick with clay tile roof for the Christian Science Church on Alvarado street and 200,000 brick for a residence and garage to be erected in Berkeley square. The company also reports an excellent demand for their white enamel brick in San Francisco, Stockton, Fresno and Santa Barbara.

Waterproofing

The Carbolineum Wood Preserving Co., 311 California street, San Francisco, are selling agents for the Duresco Washable Water Paint and Waterproofing Liquid. Duresco is in paste form and ready for use. It produces a finish of exquisite bloom and softness that is superior, it is claimed, to kalsomine. The Waterproofing Liquid for sizing is a chemical preparation ready for use and is recommended as a substitute for glue, varnish, shellac, etc. It renders plaster walls non-absorbent and prevents water stains from showing through tinting.

Big Roofing Tin Contract

Mr. J. A. Drummond, representative of the N. & G. Taylor Co., Philadelphia, calls attention to the fact that they have a very large assorted stock on the Pacific Coast of their brands of roofing tin, including the well known brand "Target-and-Arrow," which is to cover the new St. Ignatius church building in San Francisco, taking 300 boxes, each box being 14x20 feet in dimensions. The sheet metal contract of the Forderer Cornice Works alone amounts to $38,700.00. Charles J. I. Devlin is the architect.

The Taylor material is now very easily secured, being sold by many local firms with direct deliveries from warehouses in San Francisco, Los Angeles, Portland and Seattle, also through 45 tin plate jobbers of the Pacific Coast section.

Higginson Company

This well known firm of general contractors, whose offices are in the Humboldt Bank Building, San Francisco, have recently executed contracts from several architects' offices, including L. J. Devlin's, Falch & Knoll's, O'Brien Bros.', Inc., and others. They are now working on the store and apartment building at Jackson street, near Taylor, and have recently completed a similar building for the Hinkey Estate on Taylor street, near Washington. Also, they have recently finished the Witt Garage on Valencia street, near Hermann, and a store and rooming house on Howard street, near Seventh.

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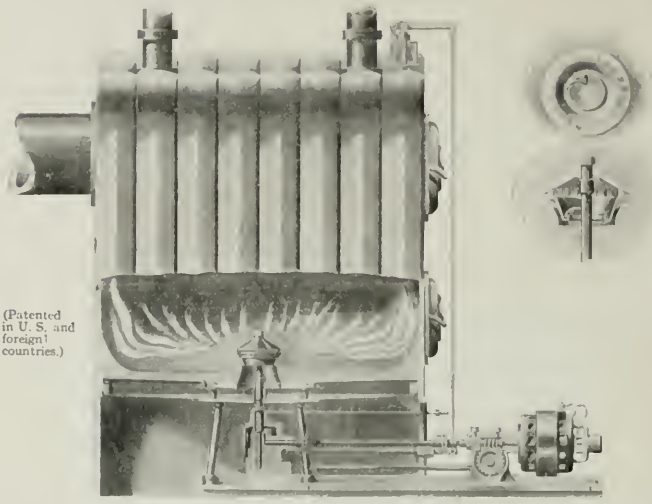

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Christmas Number — December 1912

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Contents for December

	PAGE
The Columbia Hospital, Los Angeles — *Norman F. Marsh, Architect*	*Frontispiece*
The Work of Norman F. Marsh — Showing Some of His Best Designs of School and Church Architecture	47
Architecture and the Architect — *W. R. B. Willcox, President Washington Chapter, A. I. A.*	67
The New Era in Lighting Fixtures	73
Fire—A Crime — *F. W. Fitzpatrick*	76
Dwelling—Bank—Office Building	79
Removing a Three Story Brick Building	79
The Use and Abuse of Cornices in the Design of Tall Buildings — *Chas. Cressey*	80
Collapse of the Marquam Building, Portland, Oregon	82
Diplomacy	83
A Few Interesting Facts About the World's Tallest Building	85
More Recent Architectural Competitions	86
New Type of Concrete Floor Construction	88
Erecting Heavy Girders with a Gin Pole	89
Advice to Contractors; How to Bribe an Architect — *Charles E. White, Jr.*	90
Once a Church; Now a Hotel — *S. E. Desjardins, Architect*	93
The Strength of Concrete Poles	95
Planning and Building the Apartment House	97
Your Two Cent Postage is a One Cent Tax	108
Architectural League of the Pacific Coast	109
Architects and Furniture	110
Among the Architects	111
Editorial	114
State, County, and Municipal Engineering	116
Heating and Lighting	121
By the Way	126

(Index to Advertisements, page 8)

COLUMBIA HOSPITAL, LOS ANGELES, CALIFORNIA
Norman F. Marsh, Architect

Frontispiece
The Architect and Engineer,
December, 1912.

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THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XXXI. DECEMBER, 1912. No. 2.

Huntington Park Union High School
Norman F. Marsh, Architect

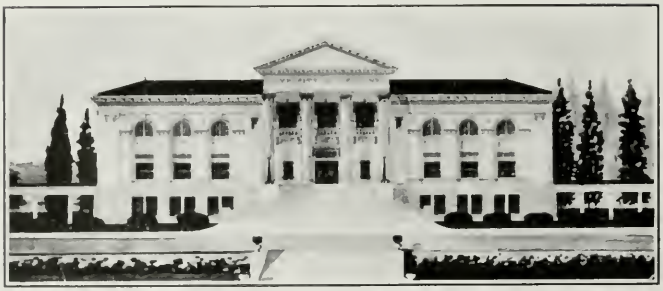
The Work of Norman F. Marsh

THE day of the specialist would seem to be here, for in most every profession we hear of him. For a number of years the medical fraternity has encouraged the work of the specialist until now there is a so-called expert for the treatment of almost every disease known to man. It is so with the practice of law, too, for we have the criminal lawyer, the one who handles only felony cases, and again we have the civil lawyer, who specializes in civil cases almost exclusively.

The call for the architectural specialist has come and in all the large business centers we find the school architect, the church architect, the office building expert, the bank planner, and residence and bungalow designer. It is true that he is a poor architect who cannot plan all of these things if occasion demands, but it is equally true that the fellow who has made special study of one or more classes of buildings has the advantage often times of his not-so-well-informed brother architect and unquestionably is in greater demand.

Probably one of the best known specialists in college, school and church designing on the Pacific Coast is Norman Foote Marsh of Los Angeles, whose buildings of this type are to be found in many of the leading cities extending as far north as British Columbia and as far south as

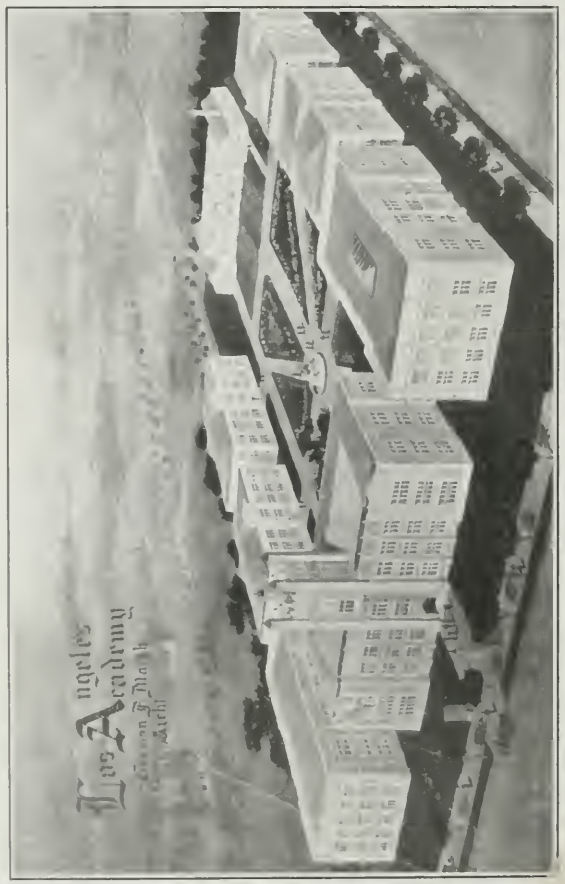
South Entrance, University of Redlands
Norman F. Marsh, Architect



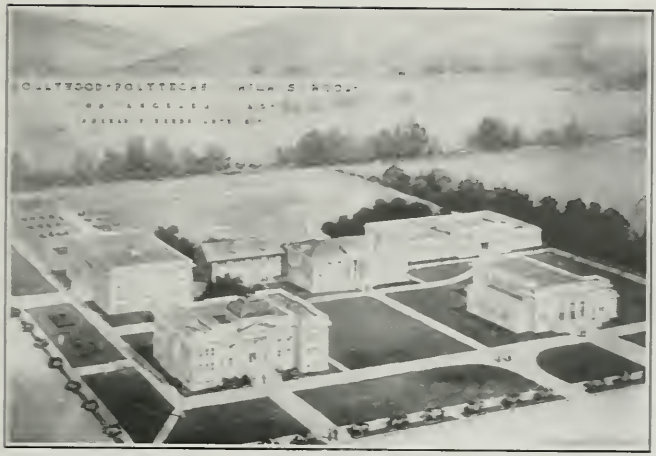
Administration Building, University of Redlands
Norman F. Marsh, Architect

Fine Arts Building, University of Redlands
Norman F. Marsh, Architect. Herbert C. Howard, Engineer Associate

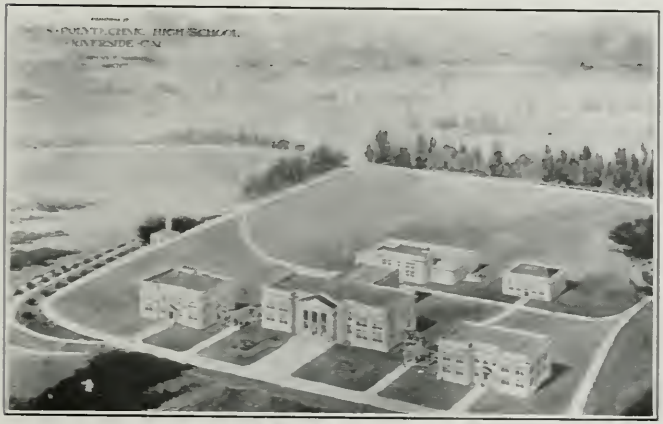
President's Home, University of Redlands
Norman F. Marsh, Architect



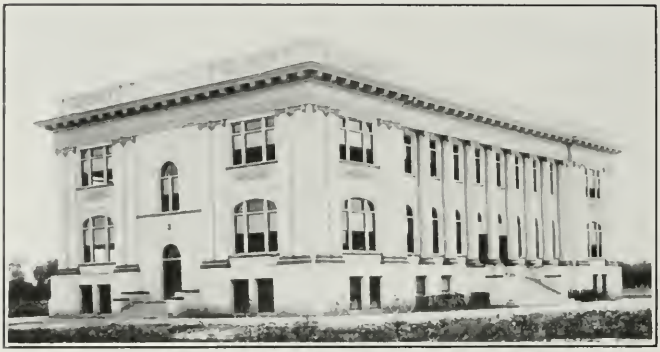
Los Angeles Academy, Los Angeles, California
Norman F. Marsh, Architect. Herbert C. Howard, Engineer Associate



High School, Los Angeles



High School



Mesa High School, Mesa, Arizona
Norman F. Marsh, Architect

Auditorium Building, Phoenix, Arizona
Norman F. Marsh, Architect

Hester Grade School, near San Jose, California
Norman F. Marsh, Architect

Science Hall, Whittier Union High School
Norman F. Marsh, Architect

Science Hall, Except of Construction, University of Redlands
Norman F. Marsh, Architect

Mexico. Of recent years Mr. Marsh has gone into the classic and one of his most recent and successful examples of this style of architecture are the buildings for the University of Redlands, California. While Mr. Marsh has given his efforts largely to the designing of churches and schools, he has designed not a few other structures ranging from the bungalow to the magnificent Columbia Hospital, a Los Angeles structure, said by experts to be the finest building of its type west of New York. Among his best efforts in ecclesiastical work are the Methodist churches at Oakland and Long Beach; Baptist churches at San Francisco, San Diego, Pomona, and Santa Ana; and Christian churches in San Diego and San Jose. The University of Redlands and the Los Angeles Academy are his best examples of college architecture. The Pasadena Polytechnic High School is pronounced by Mr. Harlan Updegraff, specialist in School Administration of Bureau of Education, Washington, D. C., to be the finest high school in the United States.

Other notable groups are the Hollywood high school, Los Angeles; Boys' high school, Riverside; Union high school, Phoenix, Ariz., and Union high school, Fullerton. Mr. Marsh has also designed a large number of elementary schools, the best example being the Hester school near San Jose.

Mr. Marsh was born at Upper Alton, Illinois, July 16, 1871, the seventh son of Dr. Ebenezer and Katherine Provost Marsh. He graduated from the high school at sixteen and then studied literature and art in Shurtleff College, Alton, Illinois. In 1892 he entered the University of Illinois to pursue an architectural course and graduated in 1897 with the degree of B. S. Mr. Marsh came west in 1900 and formed a partnership with J. N. Preston, which was of short duration. A few years later Mr. Marsh became associated with Mr. C. H. Russell and the firm came into prominence through its unique design of the City of Venice, with its arcaded streets, ship hotel, great auditorium over the ocean, miniature canals, etc. In 1907 the partnership was dissolved, Mr. Marsh continuing his work in Los Angeles and Mr. Russell going to San Francisco. The engineering of a large number of the recent structures has been in the hands of Mr. H. C. Howard.

Major Operating Room, Columbia Hospital
Norman F. Marsh, Architect

Corridor Columbia Hospital, Los Angeles
Norman F. Marsh, Architect

Arcade Street Level, Stanford University, California
Norman F. Marsh, Architect

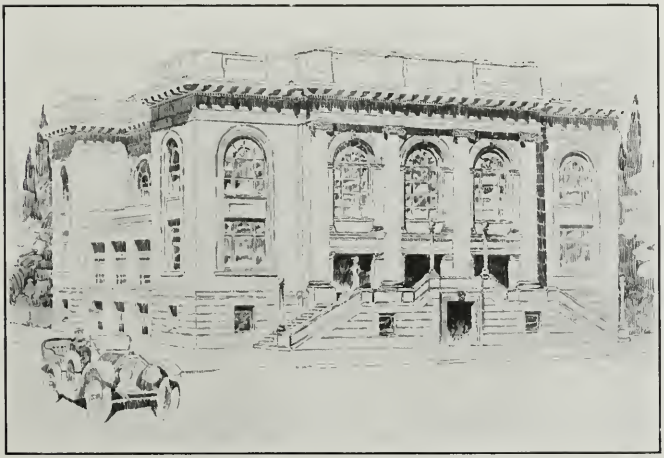
Ship Hotel, Venice, Southern California
Marsh & Russell, Architects

Windward Avenue, Venice, Southern California
Norman F. Marsh, Architect

Entrance to the Midway, Venice, California
Marsh and Russell, Architects

Lincoln Park Grade School, Los Angeles
Norman F. Marsh, Architect

Grant Grammar School, Pasadena, California
Norman F. Marsh, Architect

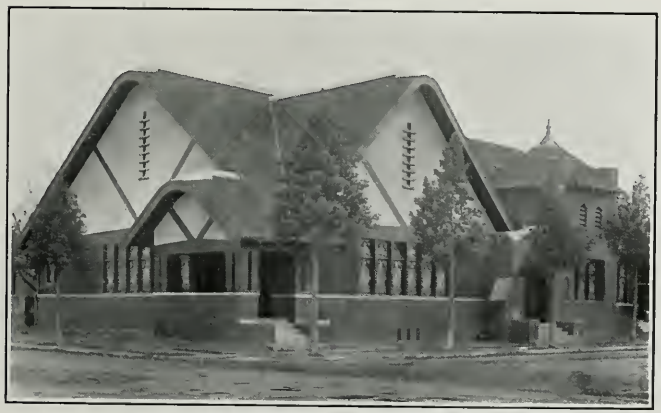


First Baptist Church, Santa Ana, California
Norman F. Marsh, Architect. H. C. Howard, Engineer

Household and Fine Arts Building, Redlands Union High School
Norman F. Marsh, Architect

Reinforced Concrete Tower, Torrey Estate, Lindsay Cal.
Norman F. Marsh Architect

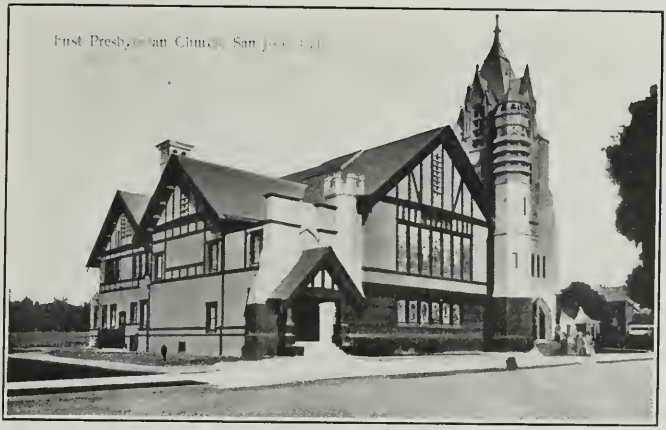
First Baptist Church, Pomona, California
Norman F. Marsh, Architect



Christian Church, Fullerton, California
Norman F. Marsh, Architect

First Methodist Church, Long Beach, California
Norman F. Marsh, Architect

First Baptist Church, San Diego, California
Norman F. Marsh, Architect — Herbert C. Howard, Engineer.
A Splendid Example of the Mission Type



First Presbyterian Church, San Jose, California
Norman F. Marsh, Architect

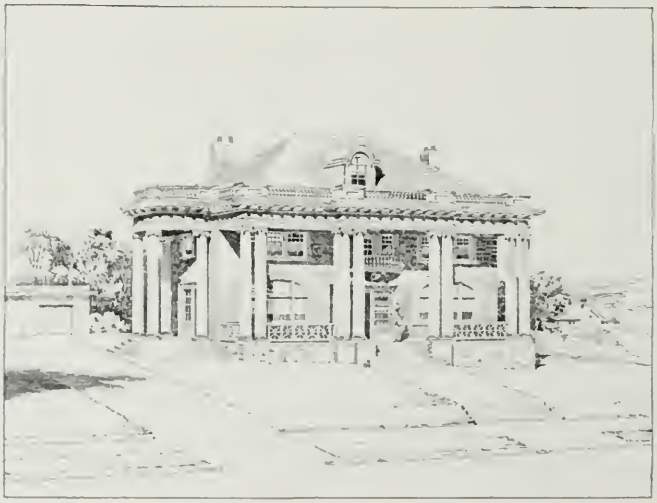
Hamilton Square Baptist Church, San Francisco, California
Norman F. Marsh, Architect. Gutleiben Bros., Builders

First Methodist Episcopal Church, Oakland, California
Norman F. Marsh, Architect

Central Christian Church, San Diego, California
Norman F. Marsh, Architect

Park Place Methodist Church, San Diego
Norman F. Marsh, Architect

Residence of Mr. Robert Sherman, Los Angeles
Norman F. Marsh, Architect



Residence of J. V. E. Marsh Esq., Alton, Illinois
Norman F. Marsh, Architect

Architecture and the Architect†

The Fancy of Clients and the Attitude of Architects

By W. R. B. WILLCOX.*

A CURSORY glance backward over the years of the Washington State Chapter reveals a steady and inspiriting progress toward better conditions of practice, higher ethical standards and conduct within the profession and a persistent effort to apply our particular training and experience, as architects, to the solution of problems of civic and community interest involving a degree of unselfish public spirit.

Except in detail the record of the past year differs but little from that of previous years. Besides questions of internal policy, such as relate to professional charges, professional ethics, membership and finance, attention has been given to the conduct of competitions, to public exhibitions, to city development projects, to educational matters, to improvement of the building ordinances and to national affairs within our function.

While accomplishment in a single year does not total much, its force is cumulative and with each succeeding year we grow in power to serve well our profession, our community and our country. Of such matters, in particular and in detail, as have occupied the chapter the past year it shall be left to the secretary to report, while, with considerable trepidation, I dwell for a few paragraphs upon a subject consideration of which before this body may not, I trust, be deemed inappropriate—namely, architecture; architecture, not as a business, not as a profession, but as a fine are, and of some of the forces which affect it.

One cannot review the course of architecture in America without noting a general rise in its esthetic merit. There has been an ebb and flow, to be sure, but the sum of successive tides has been a higher level of accomplishment. The absence, however, of a former civilization possessed of a native architecture presented conditions not to be met with elsewhere in anything like the same measure and its effect has been marked.

Sources of Inspiration

Probably no single country can show so many varieties of architectural design as America. This might be viewed as a logical outgrowth of the conglomerate of races which make up our population, but while immigration has, to a remarkable extent been assimilated, the product of which has been a new national type, the same, with equal sincerity, cannot be said of our architectural importations. If we look for a distinctive type, a style of building which may without question be recognized as American, we are likely to find it in structures with which the educated architect has had little or nothing to do, crude structures void of any idea of, or attempt at, scholarly design.

When we examine the field occupied by the skilled architect, while there are notable exceptions, we find, in the great majority of cases, that any native or national tendencies seem to have been ignored in favor of a frank acceptance of some historic type as model. Yet, when we reflect that the work of the highest merit of any people, that most indigenous, has so largely been the result of development of the work of the untutored citizen in pursuit of his requirements, we may conclude that the absence of a distinctively American style of architecture is the result, at least to a considerable degree, of a failure to seek inspiration where it is most likely to be found.

† Annual address of the president of the Washington State Chapter of the American Institute of Architects.

* Of the firm of Willcox & Sayward, Central Building, Seattle.

But if such source of inspiration be dismissed as unworthy, how have we allowed our peculiar characteristics to react upon the wealth of suggestion contained in the models we have accepted from other peoples? Has it been with fanatical dread of innovation, with timid fear of criticism, with blindness to the qualities which give to architecture its virility, or have we, architects, lacked inventive genius? Why is it that when the individual has for a space escaped such limitations and, unfettered, has interpreted with directness some portion of the varied interests of contemporary life, he seems to have shut himself off from sympathetic consideration of the majority of his fellow architects?

Let me quote from criticism of a house built not so very long ago by an architect whose work usually elicits commendation for its "purity of style," but who apparently, in the case referred to, failed to respect the conventions:

"It would be difficult to name any one authentic type of architecture from which Mr. Cabot's house is derived. It conforms in general to the style of the Italian villa, and yet it is not at all Italian in the effect it makes. Some of the detail is, in a way, Colonial, yet no one would call it a Colonial house. In fact one may as well abandon any attempt to apply a definite historical name to its architecture." And this is the remark to which I would call especial attention: "Yet in spite of this fact it none the less arouses certain pleasant and palpable, if vague, sensations."

The Meaning of Architecture

Is it not illuminating that because a building cannot be classified as of the style of the Italian villa, or of our own Colonial mansions, or say, of that of the manor houses of Brittany, the gothic halls of Tudor barons, or the chateaux of the French nobility, it should awaken in the mind of a prominent American critic a feeling of naive wonder at its effectiveness? What, pray, may architecture mean to him, what does it mean to us, when its merit seems to rest upon an easy and obvious classification in accordance with styles foreign both to our day and our country? Has our method of production, or design, so forced upon our attention the superficial endowments of architecture that it has dulled our appreciation of its essential and inherent qualities, mass, proportion, silhouette, color, texture, scale and fitness? Or are we misusing precedents after the fashion described by an able writer in a criticism of modern dramatic literature: "The old forms won their position in the world by establishing new truth, new beauty, but we so little understand them as to make them the bludgeon with which to stop further progress."

How otherwise does it happen, then, that while we have "sought inspiration," as we say in the architecture of various other peoples, and of various other times, rather than allow conditions of our own climate, of our own social and business activities to act with freedom upon the precedents and thus transfuse them with our national characteristics, we have studiously culled the typical forms of bygone styles and reproduced them with painstaking exactitude? Is it really historical association that affords the "pleasant and palpable sensations"? Yet higher compliment is seldom paid to the American architect than that his work, with wonderful skill and remarkable success, has encompassed the spirit of some other people of some other age.

Read in almost any paper, magazine, or even architectural journal commendatory descriptions of Italian renaissance houses, French renaissance apartments, Elizabethan schools, perpendicular gothic churches, Grecian

libraries and museums, Romanesque town halls—not so frequently, just now—Georgian hospitals, Roman banks and baths—I should say, railroad stations, and so on. It is not that these buildings are not interesting, nor many of them beautiful, but that they partake of the nature of what I shall chance it to call synthetic archeology. To attach to them the name of architecture as a vital, creative art, embodying and portraying the characteristics of a new nation developing amid circumstances of life influenced as never before by wealth, invention, and rapidly changing social and economic conditions, is to forget that the essential attribute of a work of art is that it be an outward, tangible manifestation of ideals.

The Attitude Toward Precedents

It is that attitude toward precedents which acts as an obstruction to the realization of our ideals as a separate people, a great nation. Variations from them of necessity will occur, due to new conditions from which there is no escape, but a normal evolution, one void of intellectual vanity, is retarded by conscious striving to bend these new conditions, just so far as possible, to meet a predetermined precedent, to effect as true as possible a duplication of its features. Often do we strain requirements of plan and sometimes disregard entirely the nature of materials in this endeavor.

I remember listening to a criticism by one prominent architect of another for using, in a single building, a combination of features derived from various historic styles. He, too, acknowledged the "pleasant and palpable sensations" awakened by the ensemble, but was distressed at the effrontery of attempting architectural design in that manner. Singularly enough this critic, at the time, was producing what is characterized as "scholarly work" based upon Jacobean prototypes. His criticism, therefore, was aimed at just the manner of production employed by John of Padua to produce the models which he, himself, was endeavoring, with studious care, to follow. Yet the introduction, upon a gothic base, of the elements of renaissance architecture was infinitely farther removed from "purity of style" than anything of which the subject of his criticism was guilty. But whatever its merit as architecture, the lapse of time had established Jacobean forms among the precedents, and they offered, therefore, perfectly proper models for reproduction; the only thing essential to their use being an adherence to them with the least possible variation.

A different attitude toward precedent is illustrated, I think, by those cultured gentlemen whose fortunes led them to cast their lots with the colonists on the Atlantic seaboard. In those early days they strove to give expression to their sense of refinement in their houses and public buildings, undisturbed by debate as to whether they should abide by the examples with which they were familiar in the mother country, or, in the freedom of their new environment, attempt a glorification of the log cabin. The weight of responsibility to create a new style of architecture probably did not oppress them, nor had they such regard for historical precedent as to cause them laboriously to avoid interesting variations therefrom suggested by changed conditions. They simply and naturally undertook to apply their acquired knowledge to the production of buildings of pleasing and dignified aspect.

The substitution of the more available material, wood, for stone, led to a perfectly reasonable modification of proportions, while the lack of facilities for reproducing the more elaborate forms of their renaissance prototypes resulted in many quaint and ingenious devices of construction and ornamentation obtainable by the aid of their simpler tools. There is

nothing of a "tasteless abandonment of traditions" in this procedure, but rather an interesting and skillful development to meet a new situation. Their works reveal an individual increment to our architectural vocabulary; they show an active, creative trend, of much less pronounced character, it is recognized, than that displayed by John of Padua, but of sufficient force and virility to produce a distinctive type which has come to be known as "Colonial."

Or consider the course of gothic architecture, think of the endless variety, the ever varying forms of mouldings, of cornices, of columns, of arches and vaults; how few duplications. Follow through the years the alternation of an artistic demand creating its structural requirement and the latter again suggesting a further artistic change. Precedents were drawn from contemporary work, each building supplying the hint upon which was reared a new and nobler monument.

So the architecture of the past should serve us as a lamp to guide our steps on into the future and not as a blazed trail over which, with greater ease and security, we may return unto the past. And evidence accumulates that certain more adventurous souls, valiant with hope and faith, are pushing forward, searching new fields for ideals of which they may have caught a fleeting glimpse, while the most of us, weighed down with architectural baggage, not only confine ourselves to well-worn paths, but indulge in mild condescension, ridicule, or open disparagement of any other practice. And any other program is a ticklish business in the serious practice of architecture, though quite proper and highly entertaining as an academic stunt.

For example, youthful designers in the Brick-builder competitions, uninfluenced by any motive save the desire to mould brick and terra cotta to a fresh expression of the very practical problems assigned, display an inventiveness and originality suggestively lacking in work done by themselves or others amid the exigencies of actual practice. Their efforts cannot be dismissed, altogether, as immature, unarchitectural, irresponsible or lacking in dignified restraint.

Client's Influence Upon Architecture

The fact is that in actual practice the problem is involved with the very practical necessity of meeting the fancy of the client. And that fancy is a choice from among concrete types which he has been taught to believe constitute the sum total of architecture; taught by the press, by the critic and by the object lessons which architects themselves continually raise. And that fancy is most readily discovered by reference to, and comparison of, existing types to which the authority of a definitely designated style attaches.

Such practice, however, misdirects the client's attention and insidiously instills in his mind the notion that architecture is a sort of cloak to be thrown over structure, any one of the different styles of which is equally appropriate to any combination of conditions. Notice, too, a by-product of this habit of thought when, in his opinion, the structure is of too little importance to demand a dress he dispenses with the services of the architect, counting his accomplishments a luxury rather than a necessary instrument in the truly creative work of the world.

When, however, the project is deemed of enough importance to demand a dress and preference for a style is indicated or approved, the architect's success lies in the degree to which he is able to suggest the spirit of a time long past and of an art developed under quite different conditions of society. The more accurately he can do so the more certain is

he to receive the commendation of the supposedly intellectual portion of the public, to escape, at least, violent criticism and to find himself in a position eminently safe if not altogether sane. A natural desire to attain such a position invites the architect to a more deailed study of, and a closer adherence to, accepted precedents, impelling him ever back into the past rather than forward toward the future. It makes him responsive to things as they have been rather than to conditions as they do, or may, exist.

The Architect's View of Architecture

In the interest of the fine art of architecture it behooves us to inquire how we, ourselves, are viewing the progress of architecture? What sensations have we when some impatient soul, discarding the subterfuge of historic scenery, bodies forth his frank conception of a problem in proportions, in masses, in details as yet unclassified? Do we yield to that feeling of offense at things with which we are unfamiliar, that challenge our intelligence and disturb our belief in our own sophistication? Before a classic order or a gothic arch we expand in the consciousness of knowledge and feel equal to a critical appreciation; we are in the presence of familiars, we are comfortable. But are we uncomfortable in the presence of what, to us, may be a strange development because we fail to grasp its meaning, because we have no scale with which to measure it? Does it annoy and trouble us and would we away with both it and its author because it breaks the rules?

Yet so has it been that art has grown. What of Richard Wagner, driven from Paris in his youth, welcomed back in his works, after his death, as a master? What of Turner and Whistler, of Walt Whitman and Edgar Poe? What of Rodin, still knocking for opportunity to add the span of his thought and inspiration to our life?

And now, in conclusion, let me say, that this is not to be interpreted as a "Call of the Wild," but rather as a plea for freedom from an intellectual bondage, an effect of which is to restrict the activities, and to lessen the influence of the architect. Let us, to that end, attune our hearts to those wonderful harmonies which are infinite and eternal and which range far beyond our intellectual ken.

*
* *

The Telephone Girl

The telephone girl sits still in her chair and listens to voices from everywhere. She hears all the gossip, she hears all the news, she knows who is happy and who has the blues; she knows all our sorrows, she knows all our joys, she knows every girl who is chasing the boys. She knows of our troubles, she knows of our strife, she knows every man who is mean to his wife; she knows every time we are out with the boys; she hears the excuses each fellow employs; in fact, there's a secret 'neath each saucy curl of that quiet, demure-looking telephone girl. If the telephone girl would tell all that she knows, it would turn half of our friends into bitterest foes; she would sow a small wind that would soon be a gale, engulf us in trouble and land us in jail; she would let go her story, which, gaining in force, would cause half our wives to sue for divorce; she would get all the churches mixed up in a fight, and turn all days into sorrowing night; in fact, she could keep the whole town in a stew if she'd tell a tenth part of the things she knew. Now don't it set your head in a whirl when you think what you owe the telephone girl?—Exchange.

Residence of Mrs. A. Burrowes, Los Angeles
Norman F. Marsh, Architect

Southern Club, San Francisco
C. A. Meussdorffer, Architect

The New Era in Lighting Fixtures*

How Wood and Art Glass are Combined to Produce Effects that are both Novel and Beautiful

THE accompanying illustrations of lamps and lighting fixtures show the use of wood as the material of construction with art glass serving as the means of diffusing and reflecting the light. These designs are strictly modern and indicate in their construction and conception the methods and tools of the present advanced state of the mechanic arts. As a matter of fact, they are the result of special machinery designed and built for the purpose of their production. They are characterized by a free use of curved lines, in many cases the curve resulting from the bending of the wooden supporting elements and the art glass accessories. Mahogany has been appropriately chosen as the most serviceable, as well as the most beautiful wood suited to their construction.

Fig. 2.—A Banquet Lamp

Fig. 1.—A Newel Fixture

Fig. 1 is a table lamp having for its standard an exquisite piece of carving of a figure in the Art Nouveau spirit. The electric lamp is entirely enclosed in the globe of bent wood and art glass. This lamp, of course, is intended for use only where a mild general illumination is required, and is rather an art object than a utilitarian light-source. The use of a human figure in various poses as a support for a lamp is very ancient in its origin and has been very often sadly abused. The representation of a human being sup-

*Courtesy of Good Lighting.

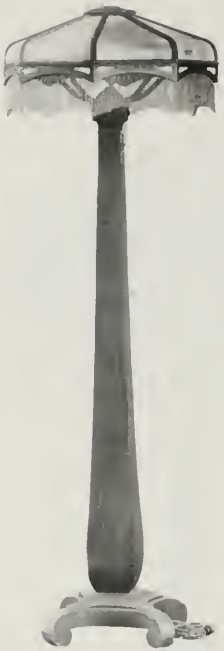


Fig. 3.—A Piano Lamp Standard

porting a lamp or cluster of lights out of all proportion to its strength, or in an attitude of action from which it must instantly proceed or fall, is a flagrant contradiction of the elementary principles of art, which is by no means an uncommon spectacle. The lamp in this case, however, is free from both of these criticisms. The figure is in a position of repose, and is conventionalized just enough to suggest that it is primarily a support and not a piece of pure art, while the globe is not sufficiently exaggerated to overburden the support.

Fig. 2 is a banquet lamp which stands 42 in. high in the original. While the design makes use of no new motives, the proportions are exceedingly graceful and the decorative elements in perfect harmony and taste. The lamp, furthermore, is an exceptionally useful illuminating unit.

Fig. 3 is a floor lamp. It is entirely devoid of surface decoration, except some appropriate carving at the top of the standard, the artistic effect being produced by harmony of line and graceful proportions. As an example of the pleasing effect which can be secured by these two esthetic elements this is hard to excel.

In Fig. 4 we have a dome embodying the same elements of simplicity and grace of line, combined with elegance of material. The fixture is appropriately supported by a chain, the general harmony being carried out by the use of wood for the construction of the ceiling canopy.

Fig. 5 shows a suspended bowl, which the illuminating engineer would class as a "semi-indirect" lighting unit—*i. e.*, one which would throw a portion of the light on to the ceiling while transmitting the other portion through the art glass of the bowl. This is likewise reduced to almost the lowest terms of simplicity and yet is distinctly pleasing in its lines and leaves full play to the rich colorings on the art glass when lighted from within.

Fig. 6 is a mixture of the "shower" type, the same general construction being applied to the smaller shades of the suspended lamps.

Fig. 4.—A Dome in Mahogany

Fig. 5.—A Semi-Indirect Fixture in Wood

Fig. 6.—A Shower in Mahogany and Art Glass

while the ceiling placque displays the richness of the material to its full advantage.

While the method of construction and materials used in these fixtures is distinctively new, it does not carry the slightest suggestion of being freakish, or merely affecting novelty. The design is mechanically in strict accordance with the materials used, having ample strength for the purpose, without excessive weight or burdensome decoration. As it is now more than a generation since the electric light came into familiar use, it is perfectly proper to assume a knowledge of its general properties. When we see an artificial light we no longer instinctively connect it with a flame, and hence it causes no surprise or mistrust when we see inflammable materials in immediate proximity to a light-source. The use of wood to support an electric lamp or the glass accessory for diffusing or modifying its light is therefore quite as appropriate as its use for the construction of any cabinet work. It is especially satisfactory to know that in putting forth what is necessarily an innovation in the method of making lighting fixtures such a thorough appreciation of the "eternal fitness of things" should be shown. Doubtless the public will show their appreciation of the wider choice afforded them by an adequate acceptance of the new materials and designs.

A Christmas Toast

Here's to the red of the holly berry,
And to its leaf so green;
And here's to the lips that are just as red,
And the fellow who's not so green.

Fire—A Crime

By F. W. FITZPATRICK

THANK Heaven, the campaign that has been so zealously waged by a few technical journals and "Fire Prevention" cranks, has borne good fruit. The battle cry of "Better Buildings," "better laws," "less fire," has been taken up by the architects, the engineers, a few builders, several noted magazine writers and, last but far from least, the editors of the daily papers. When once the latter are enlisted in behalf of any movement we can count that movement a success. True, we are so far gone now in the line of combustible construction, we had such an heritage of it and will leave such another that there is assured yet a long spell, perhaps thirty years, of disastrous possibilities in the form of great conflagrations and disheartening single fires. But all this agitation will certainly lead to one grand result, namely, that the law and our own good sense will not permit us to add any more fuel to be consumed by those fires that are bound to occur.

A few years ago the newspapers reluctantly gave us a paragraph once in a great while in which to deliver a wee message on "Fire Prevention"; today there is McClure's carrying on a series of rousing fire articles—splendidly written, so full of meat that the most callous is bound to stop and think. Newspaper syndicates are scattering columns of fire material to hundreds of papers and the editors themselves are writing clear, terse and pointed editorials on the subject; not now and then after some unusual fire excitement, but in with the other great questions of the day, treated analytically, logically. A week ago, just for a test, I had the weeklies and dailies, three hundred and twenty of them, read one day for fire matter. One hundred and eighteen had some sensible comment on news note about fire, ten gave some sort of fire-prevention advice and six had editorials regarding fire waste, fire insurance or some allied subject. The nation should be thankful for such educational matter.

Ex-Chief Croker, of New York, makes the statement that last year his department cost $8,000,000 for maintenance, supplies, etc.—the fire loss was just about another $8,000,000 and yet the city expended less than $15,000 on Fire Prevention! I venture the prediction that within five years New York City will be spending $2,000,000 a year on Prevention and that will effect a cumulative saving of $20,000,000. Think of it, the total of our fire losses (six and seven times greater than those of any European nation) and the cost of maintenance of our fire departments, curative measures, constitute a sum that, paid out or lost every year is equivalent to interest at 5% on nearly $10,000,000,000!

The Government or a wise investor will every time invest in a building rather than pay rent that equals 5% net on the cost of that building. By the same reasoning it would have been a saving to have invested that $10,000,000,000 more than we did put into our present buildings and have made them fire-resisting enough so that yearly tax or interest of nearly $500,000,000 would not have been necessary. It certainly is time that drastic action be taken in the matters for our fire losses, great conflagrations and consequent disturbances of business—not to mention the attendant loss of life—have grown unbearable, ruinous, a menace to our national well-being.

One more reform printer's ink may accomplish and that is the correction of an ill that it has helped and is helping along. Briefly: The one great measure of Fire Prevention that all can understand is that of not

adding more fuel or, in other words, getting away from the wood habit. Today we can build, even our homes, of brick, of fireproof tile, of concrete, we floor them with cement or tile or composition, our doors and interior trim can be of steel, just as handsome as and far more satisfactory than wood. There is also splendid steel furniture and our decorations may be of color instead of wood paneling and wainscoting—kindling for fire.

To stick to the wood habit is criminal. It will not be long before that is recognized and prohibited. But meantime it is a habit. "It is notably difficult," writes Auditor Darst, of West Virginia, "to awaken the adult mind to a sense of danger arising from familiar sources. The tendency is to take dangers with which one is daily associated as a matter of course and to spend little thought or effort toward improving the conditions which are responsible for them. It seems evident that if public school instruction in fire prevention had been in vogue fifty years ago the present fire waste would have been much less. The juvenile mind is much more susceptible to training than the mind of the matured man whose opinions are settled and confirmed. Our schools are one of the greatest mediums for molding characters. Should not then this subject of great and increasing practical economic importance be included in the public school training of our children? It is an intensely practical subject because it resolves itself into a question of dollars and cents. It means that in manhood they will lose less by fire, and then they will receive fire protection at much lower rates than are possible today." That instruction has been neglected. They are just beginning to realize its value and are attending to it a little. Besides the schools there is another and even more powerful educator—the Press. Yet, art journals, ladies' magazines and even newspapers go merrily on publishing designs of beautiful bungalows, cottages and what not, all of wood, jig-sawed and ornamented, shingled and well creosoted and oiled and varnished to insure a good blaze when once started, and those journals seem to think they are helpful to their readers, their constituents, by aiding and abetting and urging them to keep up the wood habit!

Those same journals would take ten kinds of fits if you asked them to advertise whiskey, dives and such, yet they go right on in their virtuous path, advertising death and disease-dealing construction, buildings that become a charge upon the entire community and that cost each community three times as much as would the policing of the "widest open" town one can imagine. It's all wrong. Perhaps I'm an extremist, but it does seem to me that that sort of thing is just as bad as pandering to any other kind of viciousness. What is the use of a journal devoting a half column editorially to a fire prevention harangue when on another page there will be a three-column cut of a wooden contraption that is lauded and puffed and guaranteed to cost "all complete and ready for occupancy" not more than $4,263?

Perhaps the editors have not thought of that. Perhaps it needs but the suggestion and they'll see the point, realize the wrong they are doing and turn over a new leaf. The Ladies' Journals are the worst offenders. And they could do so much good. Perhaps our humble prayers will have some effect and mayhap before long we will see them offering designs for and urging the building of fireproof, unburnable safe, real homes instead of the tinder boxes that have so long been the fashion, a fashion they have been guilty of fostering, of sustaining, almost of creating.

* * *

When we say a man is "dead wrong," we mean that he does not agree with us.

[illegible] Building and Trust Company's First Home, Sacramento, California

New Home of Capital National Bank
Showing Extension Lower at the Original Building has been Removed
Charles S. Kaiser, Architect

Dwelling—Bank—Office Building

THE hybrid building shown in one of the accompanying cuts is the result of an operation of several years ago in which an old brick dwelling was adapted to the requirements of the Capital Banking & Trust Company at Sacramento. The upper floor was divided temporarily into offices. In shoring up the old walls, steel columns and lintels were intended to carry a future building of six stories, and the foundation was correspondingly reinforced.

The improvements then contemplated are now about to be realized through the enterprise of former Bank Commissioner Alden Anderson as president of the Capital National Bank, which succeeds the older institution. At the same time the building is to be enlarged to double its present size, the full property having a frontage of 80 ft. on J street and 87 ft. on Seventh street, diagonally opposite from the palatial new Mills National Bank, designed by Willis Polk & Company.

Owing to conflicting requirements in the orginal alteration, the columns on the Seventh street side are irregularly spaced, and this has been frankly abandoned in the upper stories. The construction is to be reinforced concrete, with pressed brick and terra cotta facing to continue the treatment of the present first story. The interior finish throughout is to be first class, the entire alterations, exclusive of the banking room, to cost about $150,000. The architect is Chas. S. Kaiser of San Francisco and Sacramento.

* * *

Removing a Three-Story Brick Building

A recent issue of the Engineering Record describes the manner in which a large three-story brick building was raised bodily from its site, revolved through a right angle, transported 300 ft. and deposited on a new site on the opposite side of the road. The clearing operations had to be carried out within forty days, for a penalty of £20 per day for every day beyond this period would have been imposed. The building weighed 2,550 tons, covered an area of 60 ft. by 105 ft., had walls 16 in. thick, and was embellished with a tower 120 ft. high. At the outset the whole weight of the building was transferred on to a series of beams supported on five longitudinal sills. Four hundred 10-ton jack screws supported the sills and by means of these the building, with the upper part of the tower removed, was raised 2 ft. in about two weeks. A cast iron ball-bearing pivot was disposed beneath the building at its center of gravity, and roller planks laid around it. The weight of the building was then transferred to 500 8-in. rollers 4 ft. long. Tackle and a number of two-horse capstans were then employed to revolve the building. This process occupied another two weeks. The roller planks were then removed and longitudinal track timbers set in their place. The rollers were again inserted and the building steered across the road to its new site, where suitable foundations and cellars had been prepared for it. The building was cleared from the old site in just forty days after the contract was signed and was lowered on to its new foundation six days later.

* * *

"It's no use taking life too seriously — you'll never get out of it alive anyway."—said a humorous engineer.

The Use and Abuse of Cornices in the Design of Tall Buildings*

By CHAS. CRESSEY

COULD it be that every architectural feature of a tall building might speak in its own defense, that dominating feature of so many designs, the cornice, would probably be the one to find the greatest difficulty in justifying its existence. So solidly founded in traditional design is this feature that it is with hesitation one dares to question its necessity or propriety in modern design. The skyscraper, however, is an instance where every detail of historic design may legitimately be questioned, and particularly the magnified details from the venerable "Orders."

Though instances do occur where practical shade and shelter are secured from the use of the classical cornice, it is doubtful whether this aspect has much to do with its general adoption on high buildings. Is there, in fact, a single practical advantage which can be urged in favor of the spreading cornice usually found crowning a skyscraper? On the other hand, there can be no doubt that its practical disadvantages are numerous. What, for instance, would be more unsatisfactory structurally, than the eccentric loads and complicated framing connected with the support of a heavy overhanging mass, which at its best DOES NOTHING, is of dubious effect artistically, and which places purely optional weight where it decreases rather than increases the general stability of the building. That this matter of undesirable load is recognized, is obvious from the use of painted shams, "just like stone," upon buildings where cost has evidently not been the serious question. I would here disclaim any antipathy to the use of metal in the abstract, if it can be presented in honest and seemly guise. Surely, stone detail is an insult to a material capable of good results on its own merits.

Whatever may be the material of the cornice, it is always more or less of a troublesome feature, particularly on limited frontages. There must be few architects who have not, at one time or another, cursed, politely perhaps, the fact that they dare not overhang a neighbor's land. Is not every city full of examples of stunted ends and painful expedients to "stop" the cornice which no ingenuity can make "return?" True, many buildings would have less pleasant wall surface next the boundary lines, were it not for the insistent demand of the cornice terminating above. True, too, it is that much valuable light is lost for this same reason.

American cities are, unfortunately, able to show many instances of the unbalanced effects due to prominent cornices appearing on only one or two faces of buildings in full view. Even where conditions permit a continuous cornice, how rarely does the building appear truly plumb—a result not unexpected when one considers that the eye, traveling upwards from a base thinned to its limit, cannot pass the great cornice overhang to anything above substantial enough to correct the illusion. Probably the best effects occur where the cornices form subordinate features only and are well below the sky-line. The eye, either from custom or by instinct, does not seem aesthetically satisfied without an apparent counterbalance above a projecting cornice, and as this is an ordinary structural requirement, it appears to be logical that the cornice should NOT form the sky-line.

The habit of using strongly defined cornices is exercising a bad influence on the appearance of cities, as tall buildings of single frontage become more numerous. Usually there is little regard for harmony or continuity of level of adjacent cornices. A few years ago the Architectural

* Extract of an address before the San Diego, California, Architectural Association.

Record published an article on the value of the curve in street architecture, and the illustrations showed strongly that there is aesthetic value, too, in continuity of street cornices. Continuity is perhaps beyond hoping for in these individualistic days, and the remedy for jerky vanishing lines would seem to be in restraint of the cornice habit. Seen from the street, it cannot be said that the high cornice gives any great amount of pleasure, however carefully detailed it may be, whilst the ponderous members must form a source of wonder, if not of humor, to the spectator who views them from a high level.

Conditions limiting the architect today, especially in tall buildings, appear to demand that the custom of projecting architectural features should be restrained, and a substitute found in recessing. It would appear, too, that the upper stories of high buildings might more generally be built on receding planes, and so express outwardly the gradually reducing weight of the structure. The above thoughts lead the writer to the conclusion that a truer architectural crown to the skyscraper would be gained if the projecting cornice could be entirely omitted, and the powerful vertical lines allowed to dominate, unaffected by the abrupt and limiting cornice edge. The designer might then find scope for pleasant fancies in pierced parapets and other openwork, expressing protection and inclosure of the roof, and above all, gain a restful merging of the mass of the structure into infinite space.

* * *

Approximate Times for Removing Forms from Concrete

As a guide to practice in concrete work, the following rules are suggested by Building Age:

Walls in Mass Work—One to three days or until the concrete will bear pressure of the thumb without indentation.

Thin Walls—In summer, two days; in cold weather, five days.

Column Forms—In summer, two days; cold weather, four days, provided girders are shored to prevent appreciable weight reaching columns.

Slabs up to 7-ft. Span—In summer, six days; in cold weather, two weeks.

Beams and Girder Sides—In summer, six days; in cold weather, two weeks.

Beam and Girder Bottoms and Long Span Slabs—In summer, ten days or two weeks; in cold weather, three weeks to one month. Time to vary with the conditions.

Arches—If not small size, one week; large arches with heavy dead load, one month.

All these times are, of course, simply approximate, the exact time varying with the temperature and moisture of the air and the character of the construction. Even in summer, during a damp, cloudy period, wall forms sometimes cannot be removed inside of five days, with other members in the same proportion. Occasionally, too, batches of concrete will set abnormally slow, either because of slow setting cement or impurities in the sand, and the foreman and inspector must watch very carefully to see that the forms are not removed too soon. Trial with a pick may help to determine the right time.

In removing forms, one large builder—C. A. P. Turner—requires that a 20-penny spike driven into the concrete must double up before it has penetrated one inch.

Collapse of the Marquam Building, Portland, Oregon

THE Architect and Engineer is in receipt of the following letter from an engineer in Portland, Oregon, referring to the causes of the recent collapse of the Marquam Building in that city:

Editor The Architect and Engineer,
San Francisco.

Dear Sir.—Referring to the collapse of the Marquam Building I will give you a brief description of the cause which lead up to the disaster, if it can be called a disaster. Public opinion seems to call it a blessing that the thing fell down without loss to human life. The building was erected in 1892 by a Mr. Marquam who was a contractor and builder, and had accumulated a fortune in that line of business. The building occupies one of the choice corners in the business section of the city, and in its time was considered a high class office building, but as Portland advanced from a sleepy overgrown village to a half grown city, the building became a home for quack doctors, and patent medicine fakers, and the element that generally follows in the wake of the above named professionals.

The building was an eight-story structure, the eighth floor having two large public halls. About a year ago the persons who acquired the property from Mr. Marquam organized the Northwestern Fidelity Company, and at once conceived the idea of remodeling the Marquam Building by removing the heavy stone work from the front, on the two lower floors, and making this part of the structure look like a modern building, the bank to occupy all of the ground floor.

The contract was let to the Sound Construction Company of Seattle for cost plus-a-fixed-sum covered by a heavy bond. They commenced work some time in June, using the ordinary methods adopted by most contractors for this kind of work, using 20″ I beams for needle beams through the walls supported on 12 x 12 timbers inside, and outside the 12 x 12 timbers rested on jacks which were adjusted to take the load of the floor above the I beams. They had removed the stone work from center of the building to the corners, and had placed the steel columns and girders on the Morrison street side, and had one section of girder about 16 ft. long in place on the Sixth street side, leaving about 20 ft. of the wall, resting on the I beams and jacks. At 4 o'clock on the morning of the 21st the second pier from the corner fell, carrying the wall up to the fourth floor with it, in an irregular break, leaving the upper part of the pier and adjoining wall in a shattered condition. At 11 A. M. the same day the remaining upper portion of the wall fell and with it came the next pier and the floors of this section including the roof. Cracks developed in the side walls and also in the end wall several days before the section collapsed, and upon examination of the walls it was found that the brick was of a very inferior quality, being soft and of poor material. This no doubt contributed to the cause of failure.

While the underpinning was going on the contractors divided the large hall rooms on the eighth floor into twenty or more offices, building tile partitions, laying new tile floors in the halls, and putting in new ceilings, all of which added to the weight on the already overloaded walls. The officials of the Northwestern Fidelity Company have decided to tear down the whole building and erect on the site a 12-story reinforced concrete building, and they are now demolishing the old structure. The new one will cost a half million dollars.

Diplomacy

THE hasty word, spoken or written, has cost a pretty sum to those who have failed to control their temper. When exasperated by some of the innumerable things that keep coming up in business to harass one it often occurs that words are used which are regretted after it is too late to recall them. The most effectual way to impress upon the minds of such people the folly of giving way to their angry passions in business is to show them the pecuniary loss that in the majority of cases is pretty sure to follow.

Temper, which implies calmness of mind, moderation and equanimity, is a most necessary attribute, and the more a man has of it the better he is off, provided he also has the power of control. Control is absolutely necessary to lasting success. It is a leading characteristic in diplomats, and diplomacy is a great asset in business.

When a man becomes angry he loses his better judgment and says or writes things that prove harmful to his interests. In business it frequently costs him money. The harshly spoken word is gone beyond recall, although an apology sometimes counteracts the harmful effects of a first offense. But apologies are, in themselves, a confession of error, and the occasion for making them should be avoided.

The harshly written word is equally, if not more, harmful than the harshly spoken one, but it is possible to guard against the harmful effects of the harshly written word by laying aside for the time being any letter or communication in which it has been used. If this custom is followed, many a letter written in anger will be destroyed the next day, if not within a few hours, after it has been written, according to the intensity of a man's feelings and the time it takes him to cool off.

It is a good thing for a man to get mad occasionally if he has the power of controlling his temper. A noted public man, prominent in reform and philanthropic movements in New York, said sometime ago, in speaking of the deplorable conditions in municipal affairs in that city, that what was needed was for the people to "get mad and stay mad." It was necessary for the people to become aroused and determined, in putting down the abuses that were being practiced upon them by those in authority. He was right, but he did not mean that the people should become angry in the sense that they should rave or become furious.

A man may and usually does have perplexities and annoyances in connection with his business that rile him to the point of anger. If he loses his temper under such conditions and says or writes things that make it apparent that he is exasperated and resentful, it very often is the means of his losing custom and lost custom means lost profits.

Judgment and control are required under such circumstances. There are, of course, cases where a customer has taken, or tries to take, unfair or even dishonest advantage, and in such cases a vigorous but dignified response is demanded and should be made. It is seldom, however, that a heated, angry response is justified.

The man who controls his temper under all circumstances is the best diplomat and, granting that he is endowed with other requisites, the best diplomat is the best business man.—Rock Products.

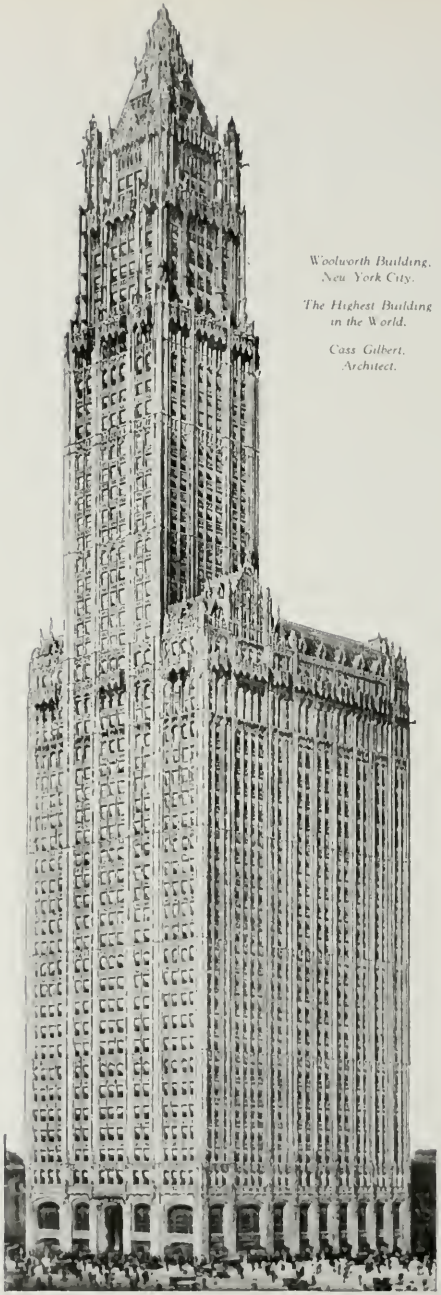
* * *

A Great Chance for Burbank

"Here's something for Burbank to try his hand on," said a man to his neighbor.

"What's that?"

"Training a Christmas tree to sprout its own Christmas presents."



Woolworth Building,
New York City.

The Highest Building
in the World.

Cass Gilbert,
Architect.

A Few Interesting Facts About the World's Tallest Building

THE Woolworth building, illustrated on the opposite page, is fifty-five stories high and the tallest building in the world. Construction of the huge structure is now under way from plans by Architect Cass Gilbert, former president of the American Institute of Architects, and well known on the Pacific Coast.

The floor area is something over 27 acres. There are 43 miles of plumbing in the building, 24,000 tons of steel, 2575 miles of brick and 4000 gallons of interior finish from the Standard Varnish Works.

The owner of the Woolworth building made his money in a string of Five and Ten cent stores. In the United States alone there are nearly 700 of these stores whose combined sales reach $60,000,000 per annum.

In England the F. W. Woolworth Company has twenty stores known as "six pence and ha'penny bazaars" which are showing gains each month. The Company also has stores in Canada, Ireland and Scotland.

This business was started a few years ago by Mr. F. W. Woolworth. The various stores owned by him prospered to such a degree that he recently sold out to the F. W. Woolworth Company for sufficient money to put up the building described of which he is the sole owner without a dollar of indebtedness either bonded or otherwise.

* * *

Skyscrapers as Business Monuments

"It is a conceded fact that the life of the average skyscraper is but 20 years, as in that time the neighborhood will rise and fall in value to such an extent as to make the building 20 years hence either too good for the neighborhood or out of date," said L. R. Christie, a Chicago architect, at the National Convention of Building Managers. "In checking up a number of office buildings throughout the entire country I find many modern buildings making a dividend of less than 3 per cent. Analyzing such propositions, one can not help but come to the conclusion that the original construction and layout of the building is the direct cause of no better returns.

"The days of putting up office buildings as monuments to vanity to perpetuate the name of an individual have passed, and shrewd business men now appreciate the fact that an office building investment is there to earn dividends the same as any other business. There is no question that an office building planned by a specialized architect, coupled with the co-operation of a progressive building manager, can come to reaching an ideal building not only from a point of beauty, but from commercial value."

* * *

Reinforcing Steel Tank With Concrete

The Los Angeles water department has reinforced a 528,000-gallon steel tank with concrete. The capacity of the tank was increased to 593,000 gallons by adding 5 feet to the height, and the steel shell was incased in reinforced concrete having sufficient strength in itself to withstand the hydraulic pressure with an ample factor of safety. The jacketing of the black steel shell is also a great improvement from an artistic standpoint, as the tank is visible for many miles up the San Fernando valley.

More Anent Architectural Competitions

IT has been frequently repeated in these columns that, in the erection of a school building, the most important preliminary duty of the school board is the selection of a competent architect. Just as "as is the teacher so is the school," so it may be said that "as is the architect so will be the schoolhouse."

The eagerness of school boards to select the best possible plans for schools has led to a very general introduction of architectural competitions. While these have the additional laudable motive of removing the possibility of favoritism, it must be said that the tendency has been for competitions to defeat the very purpose for which they were designed. This has been due largely to the fact that school authorities have altogether misunderstood the professional character of the architect's services. Many have looked upon architects as mere craftsmen, whose plans might be looked over and rejected, just as samples of desks or crayons are now examined and rejected by purchasing committees.

A very straightforward statement of the position taken by the architects on the matter of competitions was recently directed by the Rhode Island Chapter of the American Institute of Architects to the newspapers of Providence, R. I. The statement reads as follows:

> Experience has led the institute to recommend certain provisions as absolutely essential in any well conducted competition. These are:
>
> (1)—The professional adviser—with a jury in very important work.
>
> (2)—The admission to the competition only of those who would be competent to carry on the work if it was awarded to them—that is the admission only of those to whom the owner would be willing to give the commission if he were to choose without a competition.
>
> (3)—A contract, expressed in the program of the competition, by which the owner guarantees to give the successful competitor the commission to design and supervise the work.
>
> (4)—Provision in the program for the payment of the successful competitor at rates not lower than those of the institute, if the work goes on, and provision also for payment of a certain amount in case the work is, for any reason, abandoned.

The first of these requirements usually precipitates discussion, and it often wrecks the whole negotiations. Those in charge of the competition claim that they know better than any architect what is the best possible plan for the building they are to erect, and they will not allow from what seems to them the architects' union, or from the professional adviser, anything which appears to savor of dictation.

The School Board Journal speaks correctly when it says there is no architects' union. The American Institute of Architects is a strictly professional body, like the Bar Association or the Medical Society, and like them, it has its code of professional ethics. The architects do not dictate. They simply say that they wish the problem stated in architectural language, and the judgment on it given by their peers; and that, if the owner does not wish to comply with these requests, they do not care to compete. For, granting which is by no means always true, that the owner knows better what he wants than the architect does, the average layman seldom knows either how to ask for what he wants, or how to recognize it when he gets it.

This asking and recognizing is the whole duty of the professional adviser, particularly when, as is usual here, he is the jury also. He has to find from those who wish to hold the competition what their requirements are and to put these requirements into a clear and logical statement so that the competing architect can grasp the problem and solve it, can reconstruct the desired building, so to speak, from his description

of it. He has to avoid contradictory requirements, to select the necessary from the merely accidental among the conditions, to see that the cost given by the owner is sufficient to do what is needed, to regulate the number and character of the drawings, in short, to be the interpreter between the two parties who speak different languages.

When the plans are sent in, if there is no jury, as there often is and preferably should be in large work, such as the state house or the post office, the professional adviser selects the best design and the next two or three in order of merit. To the author of the best design the owner awards the commission to design and supervise the work.

For, according to the third requirement, a contract has been created between the owner and the successful competitor by the wording of the program, whereby the one agrees to give to the other the commission to design and to execute the work and the other agrees to do it. Under the ordinary method of lay conducted competitions the architect has been too often at the mercy of an unscrupulous owner. The latter, even with the best intentions in the world, might be moved to "reject any or all designs," confusing in his mind the presentation of a carefully studied design, something comparable to a physician's prescription or a lawyer's opinion, with an offer to sell such and such goods for so much money. Architects are not mere showmen of merchandise to be dismissed with "Thank you. I think I will look a little further," after they have cumbered their counters with the wares they have pulled from the shelves. They put forth their best skill in good faith and they ask that the owner agree to buy from one of them—to employ that skill, however much he may change the design after employment. If the owner still "reserves the right" they simply reserve theirs not to work for him for nothing.

The owner may have the best of reasons for not so employing an architect, it will be said. This is very true and here we come to the fourth requirement which provides for payment according to the Institute Schedule of Charges, if the work goes on, and for payment of a stipulated sum, usually 1¼ per cent of the cost of the work, provided the owner is for any reason obliged to abandon the project. This is the form of contract expressed in the program.

If the architect at some risk of financial loss has won the prize it is hardly fair to turn him off with no reward, especially as the second and third competitors in order of merit have usually paid something. Such a withdrawal of the owner from the scene leaves the architect in a position which is uncomfortable, to say the least, and leaves the owner also, often unwittingly, in a hardly more fortunate attitude. Manifestly this should not be so. Let the owner withdraw if he must, but let him pay the chosen architect for the time and trouble he has spent.

The architect and owner have been almost equally to blame for the conditions in the past. A clear understanding between them ought to remove the causes of complaint on either side and enable them to work together.

* * *

How to Tell a Turkey's Age

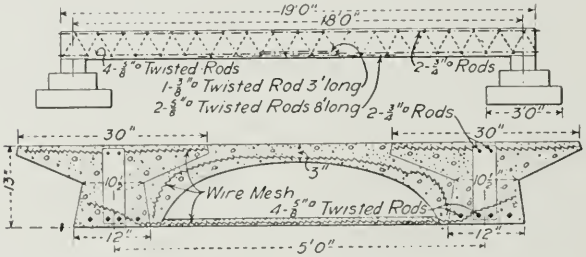
"Casey," said Pat, "how do yez tell th' age of a tu-u-rkey?"
"Oi can always tell by the teeth," said Casey.
"By the teeth!" exclaimed Pat. "But a tu-u-rkey has no teeth."
"No," admitted Casey, "but Oi have."

New Type of Concrete Floor Construction

A REINFORCED concrete apartment house recently built in Los Angeles, Cal., has a floor system composed of a combination of T-beam and arch construction of a rather unusual nature. The new building is a 5-story apartment house 60x120 ft. in area and is divided into bays with spans of 18 ft. between column centers.

The floor system, the main feature of which are shown in the accompanying drawing, is made up of a series of T-beams with jack arch sections between these beams supporting the wearing surface of the floor. The longitudinal T-beams are 12 in. deep, 12 in. wide at the base and 30 in. wide at the top. These beams are spaced 5 ft. on centers and between them at the columns the intermediate beams are 3 to 6 in. wide at the base and 30 in. at the top.

The main beams are reinforced with four $\frac{5}{8}$-in. square twisted rods in the lower section extending their entire length, supplemented by two $\frac{7}{8}$-in. square rods 8 ft. long in the middle of the beam, and two small rods about 2 ft. long directly in the center section. The upper or T-section of the beam is reinforced with two $\frac{3}{4}$-in. round rods supplemented by American Steel & Wire Company No. 7 triangular mesh reinforcement. The diagonal reinforcement for shear is heavier at the ends of the beam than in the middle section and is rigidly connected with the $\frac{5}{8}$-in. rods of the lower and the $\frac{3}{4}$-in. rods of the upper section.



Each of the arched sections has a clear span of 4 ft. and a crown thickness of 3 in. They are likewise reinforced with No. 7 wire. The sections consist of beams which are first cast as units and then placed in position in the floor system, their ends forming the sides of the forms for the T-sections. Before placing them, however, the 1-in. flat ceiling slab is placed in position, with its wire mesh reinforcement carried beyond the slab section, in position to be bonded with the concrete section of the T-beams. With these members in place the required falsework and forms for the beam sections are reduced to supports for the arch beams, and the base of the T-sections.

The ceiling slabs are also made up in units and reinforced with No. 7 reinforcement, and when in place they form a level ceiling without protruding beams. The use of this method of construction is said to lessen the amount of steel and concrete required for any given loading and also to reduce the cost of form work.

The ceiling is given one coat of plastering for a final finish and from ½ to ¾ in. of concrete is sufficient to bring the floor up to the required level. The cost of the floor system complete averages about 33 cents per square foot. According to the engineers on the work, considerable inconvenience was encountered in building the arch blocks that make up the floor, on account of the limited space available. For this reason it is believed that the cost would be somewhat reduced if more adequate provision was made for that purpose.

In order thoroughly to test this method of construction before putting it into practice, a test slab was built by the Young Construction Company of Los Angeles, who were the contractors on the work, and loaded to destruction. This panel was 7 ft. wide and 19 ft. long, constructed in precisely the same fashion as the building, and was loaded with cement to a final failure, which resulted under a load of about 1,600 lbs. per square foot. Under this loading failure was due primarily to the settling of the footings of two of the columns, which allowed the beams to deflect.

The requirements of the building department of Los Angeles for apartment houses specify a floor construction capable of carrying a load of 60 lbs. per square foot with a factor of safety of four. The behavior of the floor slab under test thus vindicated its suitability for such service. Among the advantages claimed for this system, especially in carrying heavy loads, is the action of the arch beams that compose the floor panels in distributing the load to the carrying beams and thus to the T-sections.

* * *

Erecting Heavy Girders with a Gin Pole

In a new bridge built to carry 235th street across several railway tracks in the Borough of the Bronx, New York, the roadway is carried by one center girder weighing 84 tons and two side girders weighing 55 tons, and the footpaths are carried by two outer girders, which weigh 21 tons and 22 tons each.

The two outer girders on one side of the bridge were erected by a steel guy derrick of 50 tons capacity, with a boom 50 ft. long. The 84-ton girder was delivered on one of the center railway tracks to assist the latter in the erection of the girder.

As this method made it necessary to fix the gin pole at a point where it would have interfered with railway traffic, the method was modified so that the girder was erected entirely by the gin pole by which two side girders were also erected.

Having been delivered at a considerable angle with the alignment of the bridge, the girders had to be swung horizontally through an angle of 90 deg., a requirement making the work of hoisting a delicate operation, which, although it had to be performed in short stages, was accomplished in about two minutes.

The gin pole, 65 ft. long, was seated on a special steel shoe measuring 18 in. square at the top and 30 in. square at the bottom. It was built up of four 6-in. equal angle bars at the corners, with latticed bracing, and was fitted with six 1-in. guy ropes and adjustment tackle. The hoisting tackle comprised a ¾-in. steel cable, about 1,400 ft. long, passed through two five-sheave blocks and two single sheaves at the top and bottom, both ends of the line being led to the drums of a 50-h.p. hoisting engine. The hoisting tackle was connected to a shackle lashed to the girder with two 1-in. ropes 125 ft. long, which were protected from the sharp corners of the steel by strips of timber.

Advice to Contractors; How to Bribe an Architect

By CHARLES E. WHITE, JR.

RATHER a surprising title, that—and one that does not, seemingly, inspire confidence—confidence of architects or confidence of contractors. Graft is so much talked about these days—so often played up in newspapers and magazines under black head-lines reeking with cheap sensationalism—that most business and professional men have become peculiarly sensitive about their own reputations. "Where will exposure strike next?" has become a byword in the field of human endeavor, be it business or profession, so many unexpected instances of graft have suddenly been brought to light—cases where men supposedly of highest ideals leaned and bent under sudden pressure of unusual misfortune and went down in the smash, wrecked in reputation as well as finances.

If the business world loves success and abhors failure, at least the business world respects *honest* failure. When a man remains a man in spite of business depression, when he works hard, plays fair, and stays square, there is another chance for him, always—an opportunity to begin again. Many have had discouraging experiences but most have pulled through, not only unwrecked in reputation, but with enough business assets to lay a new and firmer foundation on which they have eventually reared successful business.

Notwithstanding talks of graft and evidence of it in almost every large city in the United States, the majority of honest workers in the business world is so large—so much greater than the grafters, that the latter class dwindles down to a very small percentage. In no profession is honesty more marked than in the architectural profession, though in no profession are greater opportunities for graft. In no profession will you find more earnest integrity or less liability to lean toward dishonest practices.

Yet there are ways in which an architect may be bribed. Be he little or big every man has his price—and architects are not more exempt than others.

Every architect has his price, but not every architect can be bribed by graft. In fact, most architects are, luckily, so honest that their honest purpose is most apparent—so evident to contractors who come in daily contact with them, it is not doubted by any one.

How, then, can an architect be bribed? If he is honest, how can he be approached and caused to throw his influence toward a contractor who is desirous of getting work?

Every business man is able to exert *personality*—limited or unlimited—according to the amount of his influence and the range of its power. Every architect is more or less affected by the influence brought to bear upon him by contractors with whom he comes in contact. It may be the personality of the contractor—his disposition, his business methods, his reputation for successful building, or it may be his "pull" exerted by means of friends. In any event there are hundreds of reasons why architects as a class lean toward contractors as a class, and successful builders are well aware of them conducting their business, daily, to bring about mutual results.

The power of personality is the greatest in the world and architects are as susceptible to its influence as others. Architects like to do business with pleasant contractors—men who are honest, efficient and reliable. They often give out contracts right over the heads of less recommendable builders, though the latter may be lower in price—simply because the

architect "likes" this man or "dislikes" that one. It remains, then, for the wise builder to make himself "liked." How can he do this?

First, get a reputation for good service; have the news spread broadcast that you never cause annoyance—always work without friction. This is easier to do than one realizes, for reputation is the widest circulating wireless intelligence in the world. Any contractor who has a kindly disposition, pays attention to business and gives good service, will in a few months' time find a friend in every architect with whom he comes in contact. Of course the contractor must make himself known. He must get to the architect and convince him that he (the contractor) is worthy of a place on the contracting shelf of that office.

One builder who makes a specialty of fireproof construction has hit upon a novel scheme to keep his name and business before the architect. He supplies himself with photographs of badly burned buildings, which he makes into post-cards and mails to his list of architects. Pictures are easily secured, and they never fail to attract attention.

Architects—the kind you want to do business with—can not be bribed in the sense in which we ordinarily understand the term "bribed." But they can be influenced, and they are, every day in the year. No matter how broad and fair an architect may be, he has a tendency to lean toward those contractors whose personality is likable—those fellow workers who have proved by years of faithful service that they are loyal and true.

Let the world know what you are doing and invite everybody to inspect your work. In "getting next" to busy architects nothing will put you in their good graces more quickly than showing them a good job which you and your men have accomplished. "If he can do that kind of a job for Jones," reasons the architect, "he can do a good job for me"—and so the contractor finds his chief asset in the good work he has done. When some unusually good piece of work is under way and your men are carrying it on efficiently, invite your architect acquaintances out to see the job.

Don't wait until the building is completed, but arrange to have them see the work while the "wheels are going 'round." Fireproof houses are particularly interesting just now and always make a hit with members of the profession. Let them examine your floor construction—show them how easily it can be built and how enduring it is when finished.

The contractor's office is a big business getter, too, when it is arranged in a businesslike way to make a good appearance. Modern trend in business is toward perfection of system. Best business methods are of a very high order, and the contractor who maintains a sloppy office will surely lose ground. A well-arranged office costs but little more than the makeshift with which so many contractors are satisfied, and it will prove one of the greatest assets of the business. If you don't care to swing an office all yourself, combine with some real estate agent or take space in an insurance office where your own business will be contained in but one desk, perhaps, but where you and your customers can have the benefit of a decent place in which to do your business.

Don't make the mistake of having your desk out in the shop where you store your supplies. No matter how orderly your stock is disposed, the average storeroom used by a builder seems like a junk-shop to the layman, who usually looks with contempt upon any man who is so old-fogy as to do business in such a place.

It is part of the game in impressing architects with your merit to make a gentleman of yourself. "Shirt-sleeve" contractors have been the rule in the past, but a new and younger generation of builders has well-nigh revo-

lutionized the roughshod manners of the period ending about 1900. Your youngsters in the building game are wise beyond their years; you will find most of the successful ones in the forefront, with high collars and starched cuffs. Hard workers they are, too, but they work with their heads more than with their hands. They realize that conditions have changed—father's methods, successful enough when father first hit the business trail, are behind the times now.

The man who wants to influence architects his way must *pry* his way instead of pushing. Let him quietly, calmly get in touch with the men he wants to do business with, taking every opportunity to pound home the idea that he (the contractor) knows his business and can be depended upon to put the job through promptly and efficiently. Such a builder can always secure good prices for his work because he is "liked." Once in the good graces of the architect, he will be surprised to find how many good jobs will come his way.

You can't bribe the average architect with graft, but you can influence him by good service and dependable business methods. You can take jobs right out of the hands of your less efficient colleagues and bring things to pass by sheer personal worth.

* * *

A Concrete Spasm

A Western cement man extracted this from his system: "I was sitting back this morning with my concrete pipe alit, and I fell into a pipe dream of when concrete would be it. I was lazy, and the hazy curls of smoke around me whirled and I dreamed about the time when this would be a concrete world. I could see the ardent lover woo a maid with concrete heart, and her father with his concrete foot suggests that they must part; see him sticking through the kicking, though he pleads in accents low, till at length he proudly leads her to a concrete bungalow. Then the dream gets slightly dimmer for a moment and gets clear, and I see a concrete cradle with the parents hovering near; I've a feeling that the squealing seems too real to be a dream, and my ears are rudely shattered by the semblance of a scream. Then the good wife comes arunning with a bucket in her hand, and she hurls a stream of water that benumbs to beat the band. She is yelling, too, and telling me that I sure do take a chance if I fall asleep while smoking, 'less I'm wearing concrete pants."

* * *

Crack-Proof Cement

The report comes that by mixing into cement about 10 per cent petroleum residuum will make it resist water, and this means that the cement will be crack-proof because water cannot find its way inside of the cement compounds. It is stated that Director Page, of the office of Public Roads of Massachusetts, made the discovery while trying to compound a mixture for roads which would not break up. It is claimed that what they did find was that 10 per cent of crude oil did not injure cement and sand compounds for building purposes, but on the other hand made it waterproof and therefore crackless. As the cracking of the cement blocks and mass work has been one of the grave objections to some kinds of cement work, it may be that this discovery may be of vast interest to the building world in general.

Once a Church; Now a Hotel

An American Architect's Interesting Description of His Visit to the Town of Clamecy, France.

By S. E. DESJARDINS, Architect.

I ONCE had occasion to pass the night in Clamecy, a little city about a hundred miles south from Paris, and although I must admit that I did not see much of the place, arriving there in the evening after dark and taking my departure before daylight on the following morning, I nevertheless retained a vivid recollection of that brief visit on account of unusual incidents with which it was attended.

I was at that time quite unfamiliar with that portion of France which lies beyond the precincts of Paris, and after having found my way from the railway station I opened what I supposed to be the main entrance door of the hotel, when to my surprise and confusion I found myself not within a public reception room or office, but in the kitchen.

My first impulse was to retreat, but I soon became aware that this was actually the proper entrance to the hostelry as well as the place devoted to culinary operations. The register was produced from somewhere among the kitchen utensils and after having duly inscribed my name and address I was politely invited to be seated and wait for dinner. I had not at that time learned that hotels in small provincial cities seldom had any public sitting room, and that it was customary for guests to occupy their own private apartments or pass their time at some adjacent cafe while in wait for meals.

When, shortly after my arrival, dinner was announced, I followed the other guests to the end of a corridor and up a few steps, where another surprise of a different order awaited me. This surprise was the dining room itself, which had once been a Romanesque church. The windows were narrow and round arched and the ceiling groined with intersecting semi-circular vaults; and I observed that the floor had been evidently raised above its original level and brought within closer reach of the windows, which in churches of that style were generally set high above ground. Upon closer scrutiny I also concluded that the church had been reduced in length probably to the extent of one bay, and perhaps also by the elimination of the choir or absidal termination.

The windows were glazed with modern stained glass. The room was decorated in an attractive and appropriate manner, with due regard for its transformed function, yet from its fundamental character it remained by no means completely divested of ecclesiastical association.

The gist of table conversation among the guests, who appeared to be mostly commercial travelers, naturally tended toward the unusual character of the dining room, whose uniqueness could not but command attention; and, among other comments, one of their number suggested that it was a noteworthy coincidence that in Clamecy, of all places, a church should be not a church, but a dining room or anything else, because of the long period during which Clamecy had been the Episcopal seat of a bishop without diocese or bishopric.

I afterward ascertained some of the facts which served as basis for this remark. Clamecy, it appears, had in past ages been the Episcopal residence of the titular bishop of Jerusalem. There had once been, of course, during the time of the Crusades, an actual bishop of Jerusalem, but after the holy land had again reverted into the hands of the infidels the incumbent of that see was obliged perforce to abandon the functions

of his diocese, while at the same time sharing the common expectancy of the Christian world, which looked to the ultimate reoccupancy of Palestine.

This appointment being a prerogative of the French kings, the bishops of Jerusalem continued, therefore, to be appointed in succession from generation to generation, with fixed residence (whether actual or nominal I am not informed) in this little city. Whether the material emoluments of the office were also of the same nominal or figurative nature I am not able to venture any opinion.

* * *

Cause and Prevention of Concrete Failures

IT is a peculiarity of the failure of every concrete structure, where the primary fault is in the design or construction of the concrete or of its reinforcement, that a very apparent cause can soon be found, and that that cause is one which should have been apparent to anyone claiming more than an elemental knowledge of the science of building in concrete.

With a regularity almost monotonous we read of insufficient reinforcing connections, of improperly mixed concrete, of frozen material, of thin supporting struts and of premature removal of forms, until we wonder what is the nature of men who will not learn the fundamentals of a business at which they hope to earn their living.

There does not seem to be any good reason why the concrete building business should not be conducted in the same manner as the building of steel structures. Why should not every architect be competent himself or have associated with him an engineer competent to design the concrete structure? Why should not this expert prepare the general structural drawings for the building upon which competent contractors may bid? Once the bid is awarded, taking into account both the competency of the bidder and the prices bid, the successful contractor could himself prepare the detail plans showing methods of erection, minor steel details, etc., exactly as the steel companies now prepare shop drawings showing erection methods and connection details for the approval of the designing and supervising engineer of a structural steel building. This would remove the commercial element from design and would surely tend toward safer buildings. Such methods are very generally in use, and the buildings so erected are of the class which make the reputation of reinforced concrete as a building material.—Engineering News.

* * *

His Christmas Gift

An architect, who is also an enthusiastic chicken fancier, spends much money coddling blooded hens that do not begin to pay for their keep. He had several hens guaranteed to be the best sort of layers, yet morning after morning he returned empty-handed from his search for eggs.

By December he had about given up hope. So on Christmas morning he was delightfully surprised to find four beautiful, pearly eggs in a nest. He quickly gathered them up, planning just how triumphantly he would show them to his skeptical wife. Not until he reached the door of the house, and the bright morning light fell on the eggs, did he notice that each one bore the neatly penciled greeting: "Merry Christmas From the Old Hen."

The Strength of Concrete Poles

TESTS on reinforced concrete poles were recently conducted by the Carnegie Steel Company at its plant in South Sharon, Pa., with the view of determining the relative cost and strength of that material as compared with wood for such construction. The poles tested were 32 ft. long, 10 in. square at the butt and 6 in. square at the top. All corners were beveled and iron steps bent up ¾ in. were inserted in the forms before placing the concrete. The mixture used was 1 part of Universal Portland cement, 2 parts bank sand, passing ¼-in. screen, and 4 parts crushed limestone, passing a ¾-in., but retained on a ¼-in. screen. About one barrel of cement, ¼ yd. of sand and ½ yd. stone were used in the construction of each pole.

The reinforcement consisted of four groups of twisted rods at the corners placed not less than ¾ in. from the surface. Each group was made up of one ½-in. rod 32 ft. long, two ½-in. rods 24 ft. long and 3-16-in. rods 16 ft. long. The reinforcement was thus proportioned to the decreasing stress toward the top of the pole. Sheet steel separators held the reinforcement in place and were cut away to avoid breaking the continuity of the concrete above and below the separator.

The forms used consisted of an upper and lower section held together by bolts, the lower being a single piece, while the upper was made up of a series of units beneath which the concrete was forced. The poles thus made weighed about 2,500 lbs., or five times the weight of a wooden pole of the same length.

The tests were conducted with two concrete poles and a 32-ft. chestnut pole under the same conditions. It was found that poles of wood showed practically the same deflection as those of concrete up to 2,000 lbs., the load being applied at right angles to the pole and at the top. The deformation at 2,000 lbs. amounted to 25⅝ in., this loading being far greater than could ever be experienced in actual use. For deflections of less than 15 in. the concrete pole showed no permanent set. The test on one of the poles was carried to destruction and failure resulted at the point where the 24-ft. reinforced rods ended, the concrete being crushed for about 3 ft. above and below the break.

The results obtained showed that the cost of manufacture of such poles should be from $7.50 to $10, as against $4 to $5 for a wooden pole. The cost of wood poles is thus from one-half to two-thirds that of the concrete poles and their life of usefulness is from ten years to a maximum of twenty, whereas the life of a concrete pole is practically unlimited.

* * *

Use Cement Gun to Eradicate "Sand Flea"

In Seattle, where the harbor piles are subject to the attacks of what is locally termed the "sand flea," the means of protection from this insidious pest, whose real name is the "teredo," has been a troublesome problem. Coating the piles with concrete has proved the best method, but to accomplish this successfully during low tide constituted another problem. This has now been solved by the use of the cement gun. Some 500 piles have been treated in this manner.

Wire mesh of the type used for inclosing poultry yards is first placed around the pile, and a coating of cement from 1½ to 2 inches thick is "shot" on. The cement mixture, or so-called "guite," sets so quickly that no trouble was experienced from the rising tide.—Popular Mechanics.

"Stanford Court," Nob Hill, San Francisco, Largest Reinforced Concrete Apartment House on the Pacific Coast. Creighton Withers, Architect

Anstone Apartments, Oakland, Cal.
Louis S. Stone and Henry C. Smith, Architects

Planning and Building the Apartment House*

THE up-to-date apartment house must be planned to suit the location and its surroundings, and the exterior must be designed to frankly explain its purpose. The floor arrangement should be treated in such a manner as to give all rooms, including the bathrooms, outside light, without the aid of light shafts. All bedrooms should be detached from the living rooms, and grouped in such a way as to avoid a long, narrow hall within the apartment. Particular attention must be paid to the main entrance, the vestibule and the stairs, and all public halls should be of ample size and should have plenty of light directly from the outside. Separate entrances and stairs for all deliveries should be provided, and the iceboxes for each apartment should have icing doors from the outside of the kitchen. Off the kitchen of each apartment there should be a small porch for garbage receptacle. In the larger buildings where porches cannot be provided, it requires a great deal of skill on the part of the architect to solve this problem.

The footings and foundation walls should be erected under the direction of a competent superintendent. The ground should be examined before any footings are put in, as they should never be allowed to be built on filled ground or black soil. The importance and value of carefully constructed footings and foundation walls cannot be over-estimated. The exterior walls should never be less than twelve inches in thickness, with furring strips on the inside to make an air space between plastering and outside walls.

In the case of interior partitions built of wood, the partitions dividing the apartments should be cross-lathed and back-plastered in the center of the studs. And if the floors are constructed of wood joists, one set of joists should be built to carry the plastering, and the other set to carry the superimposed load, which should have at least one thickness of deafening between the floor lining and finished floor.

The interior finish should be hardwood in all public halls and in the principal rooms of each apartment. The kitchens, bathrooms and bedrooms may be pine or some other kind of soft grain wood, finished with a coat of shellac, two coats of pure lead and linseed oil, at least one coat of enamel.

* Extracts of an article by Lindstrom & Almars, Architects, Minneapolis, Minn. Illustrations selected from work of Pacific Coast architects.

Douglass Apartments, San Jose. William Binder, Architect

The Lachmann Apartments, San Francisco. Henry C. Smith, Architect

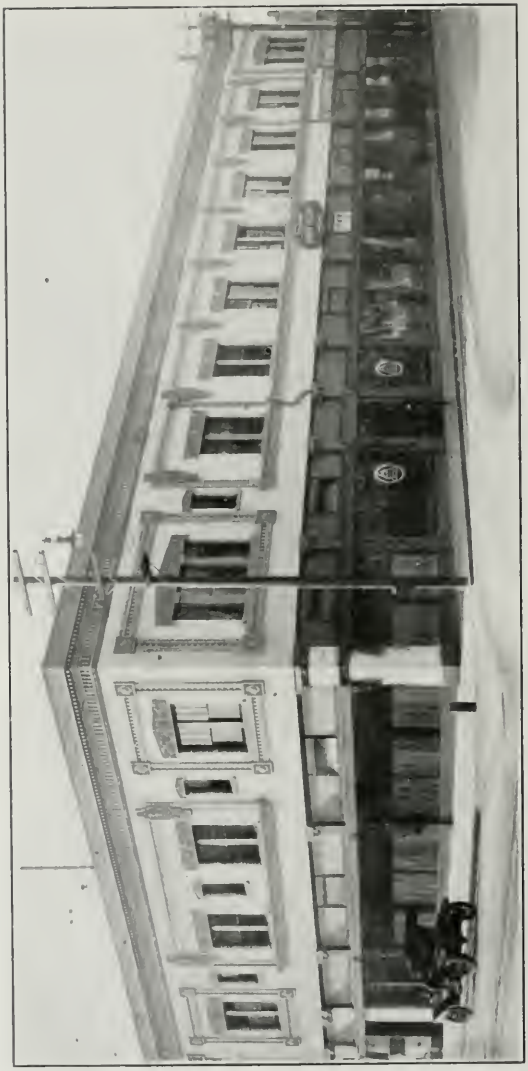
Charles Zeimer Apartments
Henry C. Smith, Architect

The hardwood should have a coat of filler or stain, and be followed with at least two coats of the best grade interior varnish rubbed to a dull finish with pumice stone and water. All floors within the apartment except the bathroom should be hardwood, finished with one coat of transparent filler and two coats of the best floor varnish. The bathrooms, public halls and vestibules should have tile floors; this will be the cheapest eventually, besides being sanitary and easily kept clean.

The kind, number and position of windows, with reference to both the interior and the exterior, are of the greatest importance, for in the exterior they must harmonize with the style of design, and in the interior there must be space left between the windows for certain pieces of furniture in each room. No apartment building is complete without a fireplace in each apartment, which should be constructed of brick with separate flues for each and faced with suitable encaustic tile.

If there is to be a laundry in the building, there must be at least one two-part laundry tub for every six families, and a clothes dryer for every six families, unless there is ample room in the basement for drying rooms. The most inexpensive system of ventilation is the gravity system, in which the fresh air is taken directly from the outside and tempered to the desired degree over indirect coils before entering the rooms. The foul air is taken off the floor through a register in the baseboard and carried up through the flues into ventilators above the roof.

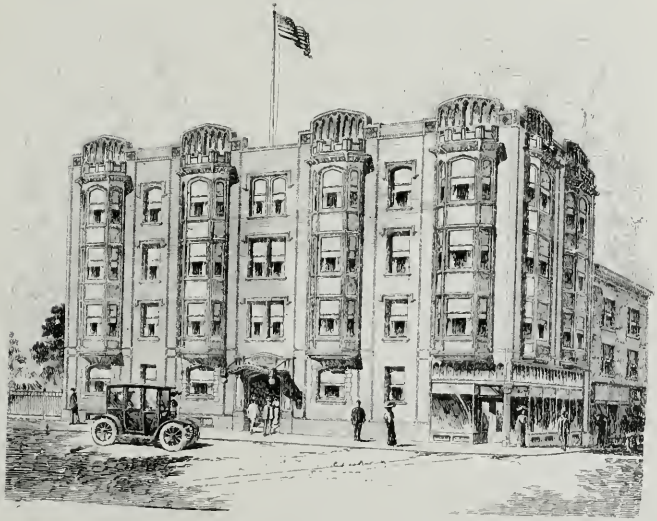
Every first class apartment building should be piped for a vacuum sweeping plant during the construction. This is a small expense, and the complete plant can then be put in any time in the future. Ordinarily, a one-sweeper plant would be sufficient for every twelve families. As a



Stores and Apartments, San Jose

William Binder, Architect

Apartment House for Marion L. Leventritt, San Francisco
G. A. Lausburgh, Architect



Stelling and Horstman Apartments, San Francisco
C. A. Meassdorffer, Architect

Design for an Apartment House
Henry C. Smith, Architect

Marsh Apartments, San Francisco
Henry C. Smith, Architect

St Regis Apartments, San Francisco
C. A. Meussdorffer, Architect

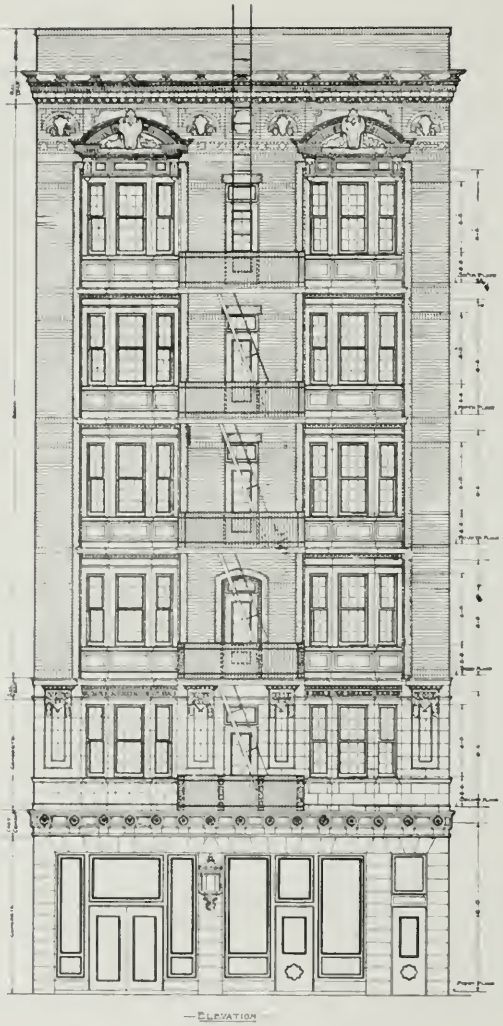
distinctive attraction for an apartment building, it is very desirable and has already come to be recognized as one of the essentials of a high class building, and the better class of tenants will demand it.

A garage in the basement for the accommodation of tenants who are owners of automobiles is a necessity; such garage must be built thoroughly fireproof, and have fireproof doors and windows and fire protection with hose connection according to Underwriters specifications.

In every apartment building, whether fireproof or not, over two stories, there should be run at least a two inch pipe, directly from the main water service, up through the partitions adjacent to the public halls, with hose long enough to reach to all the apartments on the floor, with hose connection on each floor.

All electric wiring for lighting purposes should be run in iron conduit with cutout cabinets and meter closets on each floor. All the ceiling lights in the principal rooms should be controlled by at least two single pole switches

Antonio Liola Apartment House of Reinforced Concrete
Henry C. Smith, Architect



Front Elevation for Apartment House, San Francisco
George Streshley, Architect

for each ceiling outlet. The public hall lights should be controlled from the basement convenient for the janitor, with a separate circuit for all-night lights.

The plumbing should not be left entirely in the hands of the plumber who proposes to furnish and set so many fixtures at the lowest figure. In the plumbing installation, no matter how well appointed the bath-room may be or how perfect the fixtures might appear, the work is far from being perfect if it is noisy when in use. Striking evidence of this fact may be observed in many buildings, where from any room or any part of the building the operation of a water closet can be heard. Hissing and singing of water flowing through the supply pipes; noisy ball cocks; dashing of water against the sides of the soil stack when flowing to the sewer; water hammering in the pipes or vibration of loose parts of a faucet when water is running—all these things annoy the tenants and depreciate the value of the property, and they are unnecessary. Here the law of the survival of the fittest should intervene to eliminate the less desirable. The architect who designs and the plumber who installs noiseless plumbing will have satisfied clients to advertise their business and bring orders to the office.

Dr. D. Stafford's Apartments, "The Terraces," San Francisco
Louis S. Stone and Henry C. Smith, Architects

The vacuum steam heating systems have been considered luxuries until a few years ago, but have now developed into necessities. The principle of vacuum steam heating is nothing more nor less than removing from the steam supply pipes and radiators the obstacles to free circulation, which are air and water of condensation. The vacuum is produced with a pump, usually placed in the boiler room, connected to the ends of the returns. The pump draws the water of condensation and air out of the system, into a receiver, which has a vent for the air to escape, and the water is pumped back into the boiler. There is also a trap placed between each unit or radiator and return pipe, which is the most important feature in a two-pipe vacuum steam heating system.

Your Two Cent Postage is a One Cent Tax

ARCHITECTS and engineers generally, are greatly interested in the campaign now being conducted for one cent letter postage. Active steps looking towards the inauguration of the lower postage rate will be taken by Congress this winter according to the present outlook. Now that the parcels post problem has been disposed of, the next big important step in postal affairs in this country will be the inauguration of one cent letter postage, according to the officers of the National One Cent Letter Postage Association, which is conducting a campaign for one cent postage.

Business men, generally, are backing the movement for the lower rate. The association already has a big membership, and is constantly working to enlarge it, so that when the real battle for lower postage is waged in congress next winter, the association will receive ample backing. Many important reforms have been inaugurated during the past year, resulting in the cutting down of a huge deficit and the accumulation of a creditable surplus.

In addition to this, a plan has been adopted for parcels post to be put into effect early next year. Advocates of one cent postage declare that in simple justice the government must establish the lower rate at once.

Under present conditions first-class mail is paying a surplus to the government of nearly $70,000,000 a year. Although it costs two cents to mail a letter anywhere in the United States, it is estimated that it actually costs the government less than one cent to carry it. The postoffice department has always been operated with a view in mind to carrying mail at cost. At the present time the department receives on first-class mail a revenue of 84 cents per pound, equal to $1,680 per ton. Although first-class mail supplies less than one-eighth of the total tonnage of the mails, yet it pays 75 per cent of the total revenue. This is the chief reason why the advocates of one cent postage claim the present rate should be cut in two.

Hundreds of commercial bodies, Chambers of Commerce, Boards of Trade and National Associations, as well as thousands of business houses have endorsed the campaign for one cent postage. A bill providing for the lower rate will be introduced in Congress this winter, and will be supported by commercial bodies and other organizations located all over the United States. The American Bankers' Association, in session at Detroit early in September, unanimously adopted resolutions favoring one cent postage, and urging the government to adopt the new rate at the next session of Congress.

An unusually active campaign on behalf of the propaganda for one cent letter postage is being conducted by the National One Cent Letter Postage Association, which has its headquarters in Cleveland. Its officers are Charles Wm. Burrows, President, and George T. McIntosh, Secretary and Treasurer.

Millions of stamps are being distributed throughout the United States for use on correspondence of business houses, urging the lower rate, and active steps will be taken this winter to press through Congress a bill providing for the lower rate. We are authorized to offer these stamps to any of our readers in any quantity they will use, and free of cost.

* * *

Nothing succeeds like the thing we failed at, when the other fellow takes hold of it.

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OF THE
PACIFIC COAST (Official)

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NOTE—The members of the Jury are also members of the Education Committee.

The Atelier of the San Francisco Architectural Club

By FRED M. KRAMER

ON Saturday afternoon, August 10th, the Atelier of the San Francisco Architectural Club opened for the season of 1912 and 1913 with an election of officers. Mr. Carl I. Warnecke was elected grand massier with C. I. Harrison, T. Pfleuger and L. Rosebrook as massiers and H. Michelsen, R. Locke and A. Mellberg as sous-massier.

We have been fortunate in securing for the coming season the patronage of some of the leading architects of San Francisco. Mr. Arthur Brown and Mr. L. Bourgeois as patrons of Atelier Brown and Bourgeois, Mr. J. Bauer as patron of Atelier Bauer and Mr. L. P. Rixford as patron of Atelier Rixford will help to make this year one of fame in the history of the club.

The enrollment for the season has increased about 50 per cent over last year. This is due mainly to the efforts of Mr. Arthur Brown and Mr. George W. Kelham. It is to be regretted that Mr. Kelham will not be able to attend us as patron for the coming year, but in Mr. Bauer, who has kindly consented to take over Mr. Kelham's atelier, we have a very capable and enthusiastic instructor.

Mr. L. P. Rixford has taken over the chairmanship of the educational committee, succeeding Mr. John Bakewell.

The atelier room has been equipped with long tables on the principle of the ateliers of the Beaux Arts Society. The competition spirit between the students of the different patrons manifested itself from the start and promises to become as strong as in the noted ateliers in Paris.

Seattle Architectural Club Atelier

The Seattle Architectural Club announces a reorganization of its Atelier. The school opened the latter part of September and will continue to run until the latter part of May, 1913.

The school will be known as the Atelier David J. Meyers, whose services have been retained, and it is believed that much good will be obtained under his efficient and experienced guidance.

The course of problems outlined by the Beaux Arts Society of New York will be followed, although the problems will be judged in San Francisco, those of high merit being sent to New York for final approval. Quite a large number of interested architects and draftsmen, employed in this city, have started the course and it is hoped that a larger number of the younger men in the architectural profession will avail themselves of the opportunity. Credits given in the course are recorded by the society and fit the student for advanced work later. All of the large eastern universities accept these credits and should any member desire to enter one of the architectural schools he will be given full value for the work done in the Atelier.

The officers of the Atelier are as follows: Patron, David J. Myers; Massier, E. R. Williams; Sous-Massier, Wayne Yates.

* * *

Architects and Furniture

A TOO characteristic discussion took place the other day at the Middlesex County Council, on the occasion of a recommendation from the County Buildings Committee that Mr. J. S. Gibson, the architect for the new County Hall, should also be commissioned to design the furniture and fittings, and to superintend its construction, at a fee of seven and one-half per cent on the amount expended. The fee is too small, because the work to be done is far greater in proportion than the work to be done for the usual five per cent on the cost of a building. The outlay on a building includes a great deal of work, such as walls and flooring considered en masse, for which there is no actual designing to be done by the architect, but the cost of which all goes towards increasing his 5 per cent, so that over the whole he is fairly though not extravagantly remunerated. But in the case of furniture and fittings it is all design on the part of the architect, and for such work, unless a fixed fee were agreed upon (which would be far better), the architect would really not be adequately paid at less than ten per cent on the outlay. Whereupon up gets a certain member of the Council and declares that it is absurd to ask an architect to design furniture, when there were eminent firms who would submit designs free of cost and make the furniture required! He was supported by two other members. What strikes one most in such discussions is the ignorance about everything that is going on in the world of art; apparent total ignorance of the fact that architects are constantly asked to design furniture; that the best modern furniture has been designed by architects, and that the method of the supply of designs by commercial firms, employing craftsmen whose names are concealed and who get no credit for their work, is at the root of all the unsatisfactory and commonplace furniture and fittings that are so frequently produced. Of questions of art in small things there is here a strange oblivion, though no subject in connection with art has been more often and more publicly discussed of late years. The Buildings Committee evidently, and very rightly, considered that their architect's building ought not to be spoiled by the introduction into it of shop furniture, which might probably be quite out of keeping with the building. Fortunately the chairman, who earnestly exhorted the Council to have confidence in the Buildings Committee and to support its decision, succeeded in getting a majority in favor of the committee's report, and the ridiculous amendment on it was not carried.—Architects' and Builders' Journal

Among the Architects

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Oakland Architectural Association

Meets Third Monday Each Month.

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Standing Committees of San Francisco Chapter for 1913

President-elect Geo. B. McDougall of San Francisco Chapter, A. I. A., announced the appointment of the following Standing Committees of the Chapter for the ensuing year:

Executive Committee and also A. I. A. Sub-Committee on Public Information:—Geo. B. McDougall, Chairman, Edgar A. Mathews, Sylvain Schnaittacher, Wm. Mooser, W. B. Faville.

San Francisco Sub-Committee on Competitions of the A. I. A.—Geo. B. McDougall, Chairman, Wm. Mooser, S. Schnaittacher, W. B. Faville, Albert Pissis.

Committee on the Architectural League and Education:—August G. Headman, Chairman, Geo. W. Kelham, Arthur Brown, Jr., L. P. Hobart

Committee on San Francisco Building Laws:—W. H. Toepke, Chairman, G. A. Applegarth, G. Alexander Wright, Leo Devlin, Frank Shea.

Committee on Commercial Bodies:—H. A. Schulze, Chairman, J. W. Reid, L. B. Dutton, Wm. Curlett, W. D. Bliss.

Publicity Committee:—T. J. Welsh, Chairman, A. Schroepfer, T. P. Ross, Louis Stone.

Committee on Legislation:—Edgar A. Mathews, Chairman, H. A. Schulze, Clinton Day, B. Joseph, Wm. Mooser.

Committee relating to Buildings in Civic Center:—Wm. Mooser, Edgar A. Mathews, W. H. Toepke, G. A. Lansburgh, W. B. Faville.

Architects' Chapter Committees.

Following are the standing committees appointed by Mr. J. C. Austin, president of the Southern California Chapter of the American Institute of Architects, to serve during the coming year:

Entertainment—R. B. Young, chairman; J. J. Blick and Percy A. Eisen.

Membership—J. E. Allison, chairman; Roy Hillman and R. H. Orr.

Press—W. C. Pennell, chairman; Fernand Parmentier and A. R. Walker.

Legislation—John P. Krempel, chairman; A. C. Martin, Lyman Farwell, H. M. Patterson and J. J. Backus.

Education—Myron Hunt, chairman; R. D. Farquhar and D. C. Allison.

Ethics and Practice—H. F. Withey, chairman; A. F. Rosenheim and Frank L. Stiff.

A. I. A. Sub-Committee on Competitions—J. C. Austin, chairman; J. E. Allison, Fernand Parmentier, H. M. Patterson and A. F. Rosenheim.

Portland Chapter Holds Annual Banquet.

At the annual banquet of the Portland chapter of the American Institute of Architects, the following officers were elected to serve the ensuing year:

President, Edgar M. Lazarus; vice-president, John G. Wilson; secretary and treasurer, H. A. Whitney. Ellis F. Lawrence and Morris H. Whitehouse were elected trustees.

It was decided to hold the annual convention and exhibition of the Architectural League of the Pacific Coast in Portland during Rose Festival week next year. At that meeting delegates will be present from Seattle, Tacoma, Spokane, San Francisco, Los Angeles and other Pacific Coast cities.

Architectural Competitions

Architect A. F. Rosenheim recently addressed the Los Angeles Board of Supervisors on the subject of architectural competitions. The supervisors desire to obtain plans for new buildings to be erected at the county hospital and the county farm at a cost of over $150,000, and in accordance with the state law pertaining to public buildings are compelled to advertise for competitive plans. Mr. Rosenheim, in behalf of the architects of southern California, explained the attitude of the profession toward competitions and the Code of Competitions adopted by the American Institute of Architects and suggested that the board conduct the competitions for the county buildings in conformity with these rules in order to secure the services of the very best talent. The advantages of the Institute competition and the unqualified success of those that have been held were explained and Mr. Rosenheim offered his services to the board to assist them in arranging the details of an Institute competition.

Safe School Buildings

An Oregon architect, who has been practicing his profession for many years, and who has given special attention to schoolhouse construction, writes to the School Board Journal as follows:

A faker attempted to build three schoolhouses in ——— in 1905, and they were said to be "fireproof" and all that the district should require.

I have personally examined the capacity of the roof of one of these buildings, and find from all authorities that I have in my library that the total capacity of the roof of this particular building will not stand more than four pounds of weight over its own weight.

I have lived in this country for nearly fifty years, and have found that the snowfall is frequently over thirty pounds to the square foot, and still the school board insists in employing this faker to make their plans.

A condition like the one portrayed here is simply criminal. It denotes a laxity which is deserving of careful investigation and, if true, of prompt action.

New Buildings at Byron Hot Springs.

L. R. Mead, manager of the Byron Hot Springs Health Resort, has given out the statement that work will begin within a few weeks upon a number of large cottages which will be erected on the grounds for the accommodation of guests until next spring, at which time work will be started on a 50-room hotel of reinforced concrete and which will be built on the site of the structure destroyed by fire some months ago. The plans for the hotel are being prepared by Architects Reid Bros., San Francisco.

French Chateau.

Achille Duchene, a celebrated landscape architect, arrived in San Francisco in November from Paris to begin work upon the setting for the splendid replica of an old French chateau which Mrs. Francis Carolan is shortly to erect to take the place of her old country place, "The Crossways," on the peninsula. Not only the house will be French, but the landscape is to be in keeping with it and this is the work Duchene will have in hand.

Later an interior decorator and furniture designer will come from Paris to carry out the symphony of the buildings and landscape in the furniture. The new home of the Carolans will be one of the show places of California and will take its place with the Italian villa of W. H. Crocker and the Swiss chateau of the Templeton Crockers, making one of the finest groups of residences in the country.

California Women's Building.

Tentative plans for a woman's building for the State Agricultural Park, for which the Woman's Council of Sacramento has been making a campaign, have been prepared by State Architect Woollett, and with the drawings, giving an idea of the type of structure desired, the State Fair Directorate will go to the Legislature and ask for an appropriation for the structure.

The woman's building is intended to have two stories and will be thoroughly supplied with all the conveniences of a home in addition to a large general exhibit hall and several smaller display rooms for particular classes of woman's work. Special provision is made in Woollett's plans for the convenience of women with small children.

San Diego Architects Meet.

The regular meeting of the San Diego Architectural Association was held November 14th, and was the first of a series of monthly dinners and meetings to be held during the winter.

The meeting was presided over by President W. S. Hebbard, and the following members were present: Edwin T. Banning, L. T. Bristow, G. A. Hanssen, Eugene M. Hoffmann, D. H. Holmes, Robert Halley, Jr., Theo. C. Kistner, S. G. Kennedy, Chas. Cressey, Chas. Quayle, Edw. Quayle, John S. Siebert, L. C. Sherwood.

To Build Several Residences.

Architect D. C. Coleman, of San Francisco, has completed plans for several attractive residences to be erected in Jordan Park at California and Lake streets, San Francisco by M. Fisher. These houses are to be built for clients and will cost from $5,000 to $8,000 each. They will be of frame with either cement plaster exterior or brick veneer and rustic.

Personal.

Messrs. W. F. Douglas and P. F. Hartman announce that they have established an office at 608 Timken Building, San Diego. Mr. Douglas has been a practicing architect for over twenty years and for the last sixteen has been a member of the firm of Douglas & Hetherington of Colorado Springs, Colorado.

Howells & Stokes, architects, of New York, whose Seattle offices are in the Henry building, gained first place in a preliminary competition which was held between forty well-known Eastern architects for the $20,000,000 county courthouse to be erected in the new civic center of New York city. The final competition between the first ten in the preliminary competition will be held to determine upon the architect for the building. In addition to the ten contestants twelve other architects of national reputation have been invited to compete. Decisions in the competition will be given out about January 1.

Handsome Residence.

Architect Charles Peter Weeks, of San Francisco, has completed plans for a handsome two-story residence to be built at Piedmont, Oakland, for Edson F. Adams, president of the Farmers & Merchants Bank of Oakland. The house will occupy a picturesque hillside site and will cost in the neighborhood of $40,000.

$100,000 Building for Boise, Idaho.

L. P. Kielzsen, a contractor and builder of Boise, Idaho, has had plans prepared and will begin construction early in the spring on a five-story $100,000 hotel at Grove and 10th streets. It will be known as the "Imperial" and will be of pressed brick and cut stone. There will be 160 rooms.

Working Girls' Home for Portland.

Architects Whitehouse & Fouilhoux of Portland, are preparing plans for a six-story steel and concrete building to cost $150,000 and to be erected at 10th and Montgomery streets, Portland, by the Portland Women's Union, an organization working in the interests of homeless girls. There will be accommodations for from 100 to 200.

Delegates to the A. I. A. Convention.

Southern California Chapter, A. I. A. was represented at the forty-sixth annual convention of the American Institute of Architects, held in Washington, D. C., December 10, 11 and 12 by John C. Austin, A. F. Rosenheim, A. C. Martin and S. T. Norton of Los Angeles and Robert Orr of Pomona.

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The National Fire Protection Association has issued "A Holiday Fire Bulletin" that is worthy of wide circulation. It bears on its front the photograph of an ice-encrusted shell of a burned out building labeled, "A mercantile sacrifice to Christmas decorations." Upon the next page we find these warnings for stores, churches and bazars:

TO BE REMEMBERED AT CHRISTMAS TIME

Holiday fires in these while filled with people are usually holocausts.

Light, inflammable decorations make fires easy to start and easy to spread. A match, a gas flame or an electrical defect may do it.

Watch gas jets! Decorations may be carried against them by air currents.

Watch smokers! Do not permit them to light cigars inside buildings.

Do not make the slightest change in electric wiring without consulting electrical inspector.

The above broad appeal is further reinforced on the practical side by the following bit of advice and warning:

Before attempting any hasty or ill-advised decoration which may cause fire, examine your insurance contracts and see if the policies contain anything like this:

This entire policy, unless otherwise provided by agreement indorsed hereon or added hereto, shall be void, etc., if the hazard be increased by any means within the control or knowledge of the insured.

If you burn, you want your indemnity; do nothing therefore to impair your contract.

Here is an element in fire insurance policies that ought to be emphasized by the companies when occasion offers. Most of us assume when we have taken out an insurance policy that we are covered by it to the extent of the face of the policy, without realizing that the party insured has agreed not to increase the hazard upon his property. As a matter of fact how many of us have read our insurance policies, whether taken out to safeguard life or property? It is safe to say that the number of the intelligently insured is not so large as it ought to be.

A NEW LAW THAT EVERY CITY SHOULD ADOPT

In Chicago there is complaint by property owners over the enforcement of the law requiring the installation of an automatic device for shutting off gas outside of buildings. It is to enable firemen to cut off the gas supply in the event of a fire in the building, and there is no question about the value of the device. But it seems that the law as passed calls for an automatic shut-off, and these are made by but four companies under an agreed price. This phase of the question is objectionable, as is anything that compels tribute to a monopoly or to an artificial price. But the requirement for such a device is admirable. There should be a similar arrangement with reference to electric wires of all kinds. Then in the event of a fire every wire in the building could be completely cut off from all danger of being charged with a dangerous current.

A REMEDY WANTED TO PREVENT SKIMPING

Every so often we hear complaints from the manufacturers of high grade goods of the injury that is done them by the skimping of sub-contractors, and since the owner suffers as well it is worth while considering if there is not some way of putting a stop to it or reducing it to a minimum. In varnish, for instance, we have several manufacturers of high grade goods. No matter how good their product, if it is not applied properly and according to specifications, the time will come when the varnish maker will appear to have furnished a grade of goods inferior to that specified. The owner naturally will remember this in buying varnish thereafter, and the defense of the varnish maker that the sub-contractor did not use the proper quantity or reduce the strength (in both of which ways the latter can increase his profits or lessen the losses growing out of a low bid) is likely to fall on deaf ears. It would be to the advantage of manufacturer and owner if some method of inspection could be devised whereby both could be certain that the quantities and qualities prescribed by the specifications are used by contractors and sub-contractors. Inspectors employed by the architect or general contractor and sometimes by the owner are supposed to ensure this, but as a matter of fact they do not. Manifestly they cannot be in two places at the same time. Moreover, as in the case of varnish again, the sub-contractor can mix it in his shop where there are no eyes of prying inspectors, and it is not until long after all bills have been paid that his trick becomes apparent.

Clay Products Exposition.

THERE seems to be some indifference on the part of Pacific Coast manufacturers, expressed by a lack of interest and declaration to participate in the next annual clay products exposition to be held in Chicago, February 26 to March 8, 1913.

Information has been received that the Los Angeles Pressed Brick Company is the only one on the Coast which to date has signified an intention of participating in that show. It seems that many of the manufacturers have had their attention focused upon the Panama-Pacific exposition to be held in San Francisco in 1915, and are hesitating about staging an exhibit in Chicago.

But to make the San Francisco clay show a success will require the co-operation of the eastern manufacturers. A good Coast representation at Chicago therefore will in turn command the participation of the clay products exposition people at San Francisco.

Granted State Certificates.

At a recent meeting of the Southern California State Board of Architecture certificates were granted to the following applicants who successfully passed the required examination: Paul A. Needham and George W. Eldredge, Los Angeles; Ernest J. Kump, Bakersfield; Raymond S. Wiley, Ocean Park; and Walter F. Douglas, Paul F. Hartman, Frank S. Snell and Frank E. Mead, all of San Diego. A temporary certificate was granted to Architects Barnett, Haynes & Barnett, St. Louis and Los Angeles, for the erection of the 12-story class A office building at Seventh and Grand avenue for John Brockman.

State, County and Municipal Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

About Concrete Highways

By D. E. CURTISS.

MEN who know something about road building are being employed by townships and counties as road engineers, instead of using the old-time supervisor, in road districts and the "working out" of road taxes in a sort of neighborhood gossip spirit, rather than in a spirit of "fear and trembling," as certain forms of salvation is said to be attained, has been largely abandoned on account of its monumental waste and inefficiency. Efficiency is the watchword for our present plan of doing things. New machinery and new methods are being adopted at every turn.

The automobile has proved a great stimulus for the good roads movement in towns and cities, and among those farmers who own autos. It has also created, on the other hand, a good deal of opposition to the whole scheme of road improvement among farmers who do not own machines. Statistics show that out of a vast mileage of nearly 2,300,000 miles of roads and "near roads" in these United States that approximately only 8⅔ per cent. or 200,000 miles, were improved with a hard wearing surface. Following the same figures these 2,000,000 miles of unimproved roads will cost the taxpayers of the United States $1,000,000 per day during the working part of a year. To be more explicit, during the working part of a year $1,000,000 per day is sunk in the mud of our American roads.

In spite of our costly and elaborate experiments with the toll-road system we have finally recognized that our public roads belong to the public and that their use and control should remain with the public and that public roads are more than local institutions. The road is no longer a merely local institution, for over it must be transported the food and manufactured products which are necessary for the existence of mankind. This road is also traversed by people from other neighborhoods and states and the condition of this road affects the welfare, not only of the people who live near it, but of all those other classes of people who have occasion to buy the products of the surrounding country, or to sell the inhabitants, or to make use of the road as transients. It has been estimated to cost 25 cents to haul a ton of farm produce one mile over the average country road. It costs but ¾ of a cent to haul that same ton a mile on a railroad and but 75/1000 of a cent to handle it a mile on the ocean. Is it to be wondered at that ofttimes American produce is cheaper in European markets than in American markets?

An average distance of 9½ miles from a railroad a farmer will pay in this country an average of 1-16 cents more per 100 pounds to haul his grain to market at a nearby railroad station than the buyer pays to ship it from New York to Liverpool.

The average cost for hauling grain from the farm to the station (an average haul of 9½ miles) is 5.4 cents per 100 pounds, while the average ocean rate between New York and Liverpool is 3.8 cents per 100 pounds.

Our ocean, railroad and steamship rates have steadily decreased in recent years, while our common road rates have remained practically stationary, except in those sections whose roads have been improved with a hard wearing surface. As long as these conditions prevail we cannot expect the price of foodstuffs to go down.

It is a manifest duty to all concerned to build the road carrying the greatest amount of traffic much more substantially and of more durable materials than on other roads which render less service to the public. It has been estimated that over 265,000,000 tons of farm produce are handled over our railroads and shipping points yearly, and this does not include the tons and tons of milk and vegetables hauled to local markets.

Figuring that it will cost 25 cents to haul one ton of farm produce one mile over the average country road, while a ton can be hauled over an improved road

for from 10 to 12 cents a mile, making a differential or saving of about 13 cents a ton for handling.

Figuring on this basis and taking only the 265,000,000 tons of produce delivered to the railroads and steamship lines, this amounts to $325,000,000 that poor roads or "American mud" is costing the people of this country annually. What would taxpayers say if such a tax were to be levied on them yearly, for nothing in return. That's what the poor condition of our roads amounts to. The question to be considered in all cases of road improvement is not whether the outlay is large or whether the benefit to be derived from it is indirect, but whether the resultant benefit, either direct or indirect, is greater than the outlay. The benefits that may be expected to arise from the improved road may be expected to lower the cost of hauling, greatly increase facilities for transportation, and add to the comfort of those who must use the road for these purposes. The Bureau of Statistics of the Department of Agriculture obtained data which showed the average cost of hauling over ordinary roads to be 23 cents per ton-mile, and the average haul to be 9 4/10 miles. It is well known that the load which two horses can draw on a smooth, hard road is double and sometimes treble the load which they can draw on an earth road.

The practical value of road improvement will be seen in the increase in the value of lands adjacent to the public road. The market and shipping points are made more accessible and to all purposes shortening distances. More land can be cultivated, more profitable crops can be grown, because regular delivery of perishable products is made possible and adds materially to the value of the land.

Census statistics show that vegetables yield a return per acre about six times as great as the cereals, while small fruits yield a return over eleven times as great as the cereals. Neither of these two products can be grown to good advantage except near a good road, over which they can be delivered regularly, quickly, and in good condition to the consumer.

Good roads bring an increase in population and also in the means of better schools. The benefits of road improvement are directly or indirectly of great benefit to the rural dweller in every way. On roads which are subjected to heavy automobile traffic, and this will include all trunk line highways, the most important problem confronting highway engineers is the preservation of the road from the destructive action of rapidly moving automobiles. The standard macadam has been found inadequate to withstand this new form of traffic. All remedies which have been tried or suggested in this connection may be considered in two classes; first, those which deal with the construction of new roads, and second, those which deal with the treatment of the surfaces of existing roads.

In the construction of new roads we should keep the idea of low maintenance and no repair before our eyes. To maintain a road means to always keep it in good condition. To repair a road means to make it good only occasionally. In the construction of new roads various bituminous binders have been employed with crushed stone, and is known as a bituminous macadam. But a bituminous macadam is only as good as its binder and in order that a bituminous macadam road may be kept dustless it is necessary that they, along with all other roads, be treated from time to time by repair or maintenance. Repair is too costly, as the road will have to be scavenged. Or the surface may be treated once or twice yearly—at quite an expense—with a temporary or semi-permanent binder. This treatment lengthens the life of the road somewhat, by revivifying the old binder originally used. But after a period of ten years or less the binder originally used in the road loses its binding power and the road will be left without anything to hold the stone together and will quickly ravel out and be in a worse condition than before the treatment.

Maintenance is becoming a more and more important consideration, and it is evident that however low the first cost of a roadway may be, it is bound to prove itself a very expensive undertaking in the end if it requires constant repair and attention.

One of the features of a Portland cement concrete pavement that is particularly attractive is the absence of any excessive maintenance charge. The employment of cement in ancient civilization was largely in connection with high-

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way construction. At the present time, where these pavements are wanted, Portland cement concrete is the recognized foundation for asphalt, brick and similar pavements.

Portland cement concrete is undoubtedly the material that will withstand the stress and strain of present traffic and heavier traffic to come from the increased use of the motor truck. The experimental stage of concrete road construction has passed and from our knowledge of Portland cement concrete we can design a road surface to meet any traffic condition.

Length of Improved Roads in the United States.

After an investigation extending over many months, Logan Waller Page, Director of the Office of Public Roads, has ascertained that there are now 2,199,645 miles of public roads in the United States. The figures include all the new roads built up to the year 1909. In 1904 there were exactly 2,151,379. It is apparent therefore, that the increased mileage of new roads within a period of about five years has been 48,266.

In summarizing the results of this investigation Mr. Page says:

It is interesting to observe the growth of improved methods in road construction. For instance, the total mileage of stone roads in 1904 was 36,818, while in 1909 it was 59,237. The total mileage of gravel roads in 1904 was 109,905, while in 1909 it was only 102,870. This decrease in gravel roads, however, was due to a reclassification of roads. Many of those reported in 1904 to be of gravel proved to be of some other substance, while exaggerations were eliminated.

The percentage of roads which were really improved, amounted to 7.14 in 1904, while in 1909, to which year statistics are now available, the percentage was 8.66.

The total mileage of sand-clay, brick, bitumnous-macadam and other improved roads in 1904 was 6,806, while in 1909 the mileage reached 28,372.

The circular contains a table showing the mileage of improved roads, the following states having the largest mileage.

	1904	1909
Indiana	23,877	24,955
Ohio	23,400	24,106
New York	5,876	12,787
Wisconsin	10,633	10,167
Kentucky	9,486	10,114
Illinois	7,924	8,914
California	8,803	8,587
Massachusetts	7,843	8,463

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Highway Commission Prefers Concrete Bridges.

Rules governing certain construction work for State roads with particular reference to bridges have been adopted as follows by the California State Highway Commission:

(a) All such structures are to be designed by competent engineers and the plans, specifications and workmanship be subject to the inspection and approval of the Highway Engineer of the Department of Engineering.

(b) The width of such structures, exclusive of sidewalks, if any, shall be not less than twenty-one feet in the clear.

(c) Concrete bridges shall be designed to sustain, in addition to the dead load, a uniform live load of 150 pounds per square foot of roadway and the floor system to carry a twenty-ton traction engine.

(d) Steel bridges of span less than 150 feet shall be designed to sustain, in addition to the dead load, a uniform live load of 100 pounds per square foot of roadway and the floor system to carry a fifteen-ton road roller; for spans in excess of 150 feet a uniform live load of eighty-five pounds per square foot of roadway, the floor system to carry a fifteen-ton road roller as in the case of spans of less than 150 feet.

(e) Trestles shall be designed to sustain, in addition to the dead load, a uniform live load of 150 pounds per square foot of roadway, and the floor system to carry a fifteen-ton road roller.

Further, that the commission hereby declares itself in favor of concrete structures, whenever such structures are consistently possible, because of their substantial permanency.

Government Work.

Provision has been made in the December Congress Bill for the following buildings, to be erected at Fort Winfield Scott: A reinforced concrete barracks to cost $40,000; three non-commissioned officers' quarters, to cost $18,000; a reinforced concrete apartment house, to cost $30,000; three sets of double officers' quarters, to cost $54,000; an engineer's store house, $14,000, and a reinforced concrete fire engine house, $4,000.

Plans and specifications for an oil burning system to be installed at Fort Baker have been completed and sent to Washington for approval. This work includes the construction of two large reinforced concrete oil reservoirs, motors, pumps, a pump house, oil mains and oil burners. An estimated cost of $35,000 is placed on this work. Bids will be advertised for as soon as the plans receive the offical approval of the Department

Conduit Construction.

By W. H. Morton.

IT IS very evident that the tendency of the times on the part of architects, engineers, inspection departments and municipal authorities is toward the requiring of metallic conduit for the installation of wires in buildings.

Recognizing this tendency the National Electrical Contractors' Association, through its executive committee, has been working on the preparation of reliable data in regard to the proper size of conduit to be used in installing wires and cables.

The disposition in the past has been to use conduits of too small interior diameter, and in the preparation of these charts care has been taken to recommend conduits of sufficient size to cover all their conditions, and at the same time having in mind that the economy in installations should be considered and extravagant sizes in conduits not recommended. We therefore, feel that the sizes recommended are sufficiently large and at the same time conservatively calculated.

Very nearly a year has been spent in the study and investigation of this subject, and this has resulted in the preparation of charts showing in full size the proper sized conduits to be used for installation of various combinations of wires and cables, and these charts were officially adopted at the 12th Annual meeting of the National Electrical Contractors' Association.

The charts show the conduit and conductors in full size, and the prints are made from plates so that there can be no variation in size, and the sheets are mounted on heavy board with an eyelet at the top for convenient hanging.

In addition to showing the size conduit needed for such combination of wires, the charts give the actual external diameter of the conduit, and the carrying capacity of the wires shown.

The complete set comprises six charts, and shows the proper size of conduit for one, two, three, four and convertible three wire systems; combinations of duplex wires in sizes number ten, twelve, and fourteen B. & C. Gage; single wire combinations of number 14 B. & S. wire up to ninety wires; combinations of number sixteen, number eighteen B. & S. fixture wires up to one hundred fifty wires, and combinations of telephone wires up to fifty pairs.

This covers practically all of the data required for the installation of wires and conduits, and presents it in a form most convenient for use.

The advantage of a standard system is self evident from the standpoint of the architect, engineer, and contractor, and it is the hope of the National Electrical Contractors' Association that those having to do with the installation of conduits will accept the charts as prepared and write into their specifications that, "the sizes of all conduits shall be the N. E. C. A. standard."

The actual saving in time from the use of these charts will make them almost invaluable to the contractor, engineer, and architect, and orders for them or requests for further information should be sent to W. H. Morton, secretary, 41 Martin Building, Utica, N. Y.

State Printer Wants New Building.

State Printer Richardson will probably ask the California State Legislature to appropriate $100,000 for the construction of a new state printing building. Richardson says the old building is in such a dilapidated condition it will cost almost as much to remodel it as to erect a new one.

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Reinforced Concrete Roadway.

WE are accustomed to think of concrete pavements as being a very recent development; yet in 1885, Codrington, the British authority, published the following in the Encyclopaedia Britannica:

"Concrete macadam, formed by grouting with lime or cement mortar a coat of broken stone laid over a bed of stone previously well rolled, has been tried as an improvement on an ordinary macadamized surface, but not hitherto with much success."

Concrete, or concrete macadam, is an ideal pavement in many respects, but due to its comparatively slight tensile strength, the surface is apt to become pitted with holes when subjected to heavy traffic. Once the pitting starts, wear is very rapid, for the edges of a chuck hole in concrete crumble away with greatest ease. It is this that accounts for the very slow progress that concrete has made as a wearing coat for pavements.

The writer has made a number of experiments with concrete slabs reinforced just below the surface with wire mesh and expanded metal. Concrete slabs thus reinforced show far greater resistance to impacts of hammers or chisels than concrete not provided with surface reinforcement. This fact, coupled with a consideration of the theory of impact stresses upon a surface stratum, leads the writer to believe that great progress in concrete roadway construction may occur if subsurface reinforcement, as we may term it, shall be applied. This subsurface reinforcement, be it understood, in nowise resembles the reinforcement that concrete slabs are given on the lower side, for the object of that is to take the tensile stresses, that occur when the slab acts like a beam. The subsurface reinforcement which we suggest is of an entirely different nature. Its object is to distribute surface impact stresses over an area of concrete sufficiently large to prevent rupture of the surface, and the consequent formation of pits or chuck holes. Moreover, even were pitting to occur, such a subsurface reinforcement would prevent the rapid enlargement of the hole.

In considering the various forms of subsurface reinforcement, it has seemed to the writer that herringbone lath offers an excellent shape for the purpose. Possibly a corrugated wire mesh or an expanded metal bent so as to form close rows of pyramidal points would serve better. This is a matter for experiment under traffic conditions.

The objection has been raised that when the concrete wears down sufficiently to expose such a reinforcement, the steel would quickly wear so as to leave projecting "spikes" that would injure rubber tires. This objection would probably be met by applying a fresh layer of cement mortar to replace the wornout concrete. Concrete, however, does not wear with rapidity, except by crumbling from the edges; and if the formation of holes could be prevented by subsurface reinforcement, a long life would be reasonably certain.

In a recent consular report, mention was made of a foreign pavement consisting of small steel fragraments (turnings from lathes, etc.) and cement mortar, which was said to possess great resistance to destruction under traffic. Such a pavement is, in a way, a concrete having a subsurface reinforcement, but of a kind that might be too expensive for general use.

Concrete railway ties have frequently failed because of the crumbling of the concrete directly under the rail. This, too, might be prevented by a subsurface reinforcement of the kind here suggested.—*Engineering and Contracting.*

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Practical Ventilation.*

"Pure food," "pure water," and "pure air" are three elements, each of which is essential to the health of any community. While the federal government is doing much to regulate the quality of food supply, and municipal departments endeavor to provide a sufficient supply of pure water regardless of expense, no one seems to bother much about the quality of air which people are obliged to breathe. We all understand the bad effects of impure food and bad water supply, while perhaps the more dangerous results from impure air are appreciated by only a few. It is well known that fish will not live in contaminated waters. The lower Hudson, around the Battery is so polluted that it is now practically uninhabited by fish. A somewhat similar condition exists in a room, office or other enclosure where no mechanical means of changing the air is provided. How can we hope to live and keep good health in an atmosphere which is not much better than the polluted river? We insist on cleanliness where our food and water supply are concerned, and yet we seem perfectly contented to sit in an atmosphere where the air has been inhaled, exhaled and reinhaled by every other person in the room. We take into our lungs vitiated air with all its impurities and scarcely realize what we are doing. Pure air is composed of about 73 per cent nitrogen and 23 per cent of oxygen, which in any enclosure quickly becomes vitiated by respiration, gas lights and in many other ways. As carbonic acid is produced by respiration and in other ways, and organic impurities fill the atmosphere of a room, the percentage of bacteria always increases very rapidly, so that the air in the rooms under such conditions becomes actually poisonous in a very short time. In summer when windows can be left opened all day, a sufficient change of air can generally be maintained. It is during inclement weather and the cold months of the year, when windows must be kept closed, that mechanical means of changing the air become necessary. As municipal departments generally pay little or no attention to this important subject of ventilation, with the possible exception of the board of education, it is necessary for employer and employe to look at the subject from two viewpoints; one that of the necessity for ventilation, and, second, whether it is profitable to provide ventilation. Because of the impurities thrown off by the body, the excess of carbonic acid, moisture and heat and the excessive percentage of bacteria in the air of a room where people are confined, it has been found that between 1,500 and 2,000 cubic feet of air per person per hour is necessary, when doing light work. When windows are closed tight it is impossible to get a sufficient quantity of air into a room by leakage alone. If, however, the windows are fairly loose, so that more than the average amount of air leaks through the crevices, it may be safe to say that if there is not more than one occupant to each outside window that mechanical means of ventilation may be dispensed with, provided the air is not vitiated in any other manner except by respiration. The average leakage through an ordinarily tight slide sash window is about 40 cubic feet of air per hour per lineal foot of sash crevice, in winter weather, so that a window 4 feet wide by 8 feet high, with slide sash, will leak approximately 1,200 cubic feet of fresh air per hour. If there are more occupants than one to each window, mechanical ventilation is invariably necessary, to maintain a proper standard of purity. This is a fairly accurate means of determining whether mechanical ventilation is required. When an enclosure has been occupied for a short space of time the first indications that the air is vitiated are complaints from headaches, and a sure sign is the lackadaisical manner of those obliged to inhale the impure air for even a short time. If there is a tubercular person in such an office, the air which he exhales from his lungs must be reinhaled to some extent by everyone else in the same room. It certainly is no great wonder that tuberculosis and other contagious diseases are contracted by people apparently in good physical condition, when they are obliged to live in such a vitiated atmosphere full of bacteria and unhealthy organic matter. If we cannot view this subject alone from the health standpoint, why not let us do so from that of economy? It can be made a profitable investment to install a ventilating apparatus in any enclosure where a number of people are obliged to be confined in close proximity to each other, for any great length of time. A person can do more work and more effective work in an atmosphere of pure air than in one where the air is vitiated. It may be difficult to accurately estimate the increased percentage of efficiency of a person working under healthy conditions, but there can

* By Wm. J. Baldwin, Jr., Mem. Am. Soc. C. E., ventilating expert.

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be no disputing the fact that such is the case. Assume that an employe will do even 5 per cent more work or more effective work under good conditions of ventilation, the investment for a ventilating apparatus is a profitable one. Take an office with, say, fifty occupants and assume we supplied each occupant with 1,500 to 2,000 cubic feet of fresh air per hour, or a total of 75,000 to 100,000 cubic feet of air per hour. The cost of moving this quantity of air by means of an electrical driven fan and the cost of warming the air in zero weather to 70 degrees, plus the interest on the investment and wear and tear on the apparatus, would not exceed $1 per day in many cases. Making a total expenditure of, say, 2 cents per day per person as the cost of ventilation. Surely this must appeal to the thinking business man.

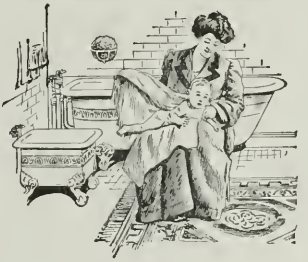
While our schools, hospitals, high-class theaters and other public and semi-public buildings are fairly well ventilated the average commercial building, including banks, printing establishments, factories and innumerable other classes of buildings, have no means of changing the air in winter weather. This subject deserves serious thought, not alone from the standpoint of health, but that of practical economy. An employe is justified in expecting or demanding a healthy place to work in, and it can be made a source of profit to the employer to provide such a place for his employes.

Individuality in Store Illumination.

SINCE the introduction of the metallized filament lamps and the later development of the tantalum and tungsten lamps, electric lighting companies and gas companies have had to meet a demand for improved lighting facility. The storekeeper and the public generally are being educated relative to the difference between light and illumination.

The increasing brilliancy of our light sources has demanded greater care on the part of the designer of a lighting installation, to so place and shade these sources of light, so that they will not only serve their purpose, that of illumination, but they must protect one of our greatest assets, the sense of sight.

The up-to-date store keeper will arrange his system of accounts in a manner best suited to his particular business, and generally there will be a difference between his system and that of his competitor. Then you will find the arrangement of his store fixtures, furniture, floor covering, and wall decorations different. This is why his lighting equipment should receive individual treatment. It is inadvisable to depend on a rule-of-thumb method of lighting on the basis that J. Jones and J. Smith each have grocery stores, and they are illuminated in a manner, at a certain current consumption per square foot. It does not necessarily follow that Mr. Johnson's store should receive the ready-made or similar equipment. You have probably read of the man who could describe the general character of man by looking at his shoes. This man could take a lot of old shoes and describe in a general way the character of the wearer. This, no doubt, required some study. A store will be judged to a great extent by its illumination, or lack of illumination. For instance, you readily notice the shoddy shop among the high class stores in the late afternoon by the



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character of the lighting equipment. In the case of a small cafe or restaurant we judge the character of the place largely by the illumination and furnishings before deciding to dine in that particular place.

The layman will not make a study of lighting equipment to determine the character of a cafe or store. He simply senses these things. It is to a great extent the inconspicuousness of the lighting equipment that attracts. It is the physiological effect of the illumination of the interior. It is, therefore, necessary to try to obtain this effect, and in each and every instance the decoration, furniture, and surroundings governing to a great extent the equipment for the very small store, as well as that for the palace.

Contractor's Lien for Heating Plant as Against Purchaser of Building.

A contractor installed the heating plant and plumbing in a building under a contract with the legal owners. Prior to its completion, negotiations were made with a view to the sale of the building, and the purchaser became satisfied, from a purported receipt from one of the owners and a telephone communication which he claimed to have had with the contractor, that the claim of the latter was fully satisfied. In an action for the foreclosure of mechanics' liens the evidence showed that there was due on the contract $3,041.05. The trial judge did not make formal findings of fact, but it was clear from his remarks that he believed the receipt to be a forgery and that, if the telephone conversation occurred it was not with the contractor, though the purchaser may have thought he was talking with him. The contractor's lien was therefore, not affected thereby. A written release was executed by the contractor to the original owners, reciting that as they were about to sell the property he discharged them from all liability for labor performed or materials furnished on the building. This paper was executed without any consideration, and as between the original owners and the contractor it had no validity. Assuming that it was executed to enable them to sell the property by showing that the contractor's lien had been satisfied it appeared that it was never used for this purpose, as the purchaser never heard of it until about the time of the trial, long after the purchase. He was, of course, in no way influenced by it at the time of the purchase. Hence it did not work an estoppel in his favor as against the contractor's right to his lien.—Seattle Lumber Co. vs. Cutler, Washington Supreme Court.

A Book on Central Station Heating

The Heating and Ventilating Magazine, 1123 Broadway, New York, reports a splendid sale for its new book: "Central Station Heating," by Mr. Byron T. Gifford, the calls for it coming not only from district heating engineers, but the heating profession generally. As a pioneer work on district heating, it presents, in compact form, all of the important data covering this field. It is thoroughly up-to-date and has the vital features of clearness and simplicity. While its main theme is central station heating, it is full of valuable hints and data that can be applied to a variety of heating problems.

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By the Way

Some Industrial Information Worth the While

Nonpareil Corkboard Insulation.

In all the world, there are no more exacting buyers than the United States Navy Department. Before they will even consider the use of a material, they subject it to the most exhaustive tests. They cannot afford to take chances on anything that goes into the making of Uncle Sam's warships.

It is a significant fact, therefore that Nonpareil corkboard was the material selected by the Navy Department years ago for the insulation of all magazines and other refrigerated rooms aboard ship. Their specifications provide that the corkboard used must withstand boiling for three hours at atmospheric pressure without going to pieces and without expanding more than 2% in any direction.

Through this severe test, they aim to concentrate in a short time those destructive forces to which all insulation is subject in actual service.

Nonpareil corkboard has been used on 40 or more battleships and cruisers of the United States Navy; also on the vessels of a number of foreign powers. More than three carloads are installed on the "North Dakota."

For insulating efficiency, durability, the ease with which it may be erected in any type of building, and as a fire-retardant, it is unsurpassed by any cold storage insulating material. For uniformity of quality, it has no equal. Nevertheless, it is remarkably reasonable in price.

The Armstrong Cork Company of Pittsburgh, Pa., are the manufacturers of corkboard insulation. They have a San Francisco agency which will gladly supply detailed information, samples, etc.

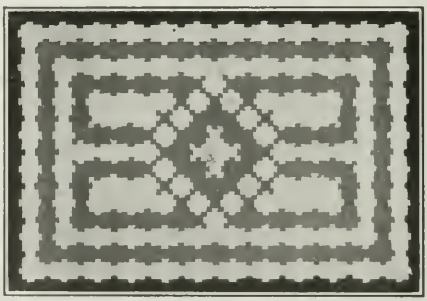
New Wybro Panel Price List.

The popularity of the Wybro veneered panels is due to the fact that they are recognized by all users to be the best stock panel on the market, and they therefore have become the standard of quality.

White Brothers, the Pacific Coast distributors have just issued a new price list which shows some few changes and additions. The cover of the list is a four color half tone showing on one side a fin-

THE ORIGINAL

INTERLOCKING RUBBER TILING



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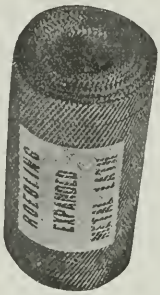
ished mahogany panel and on the other side quartered oak. Taking it all together, the pamphlet is as fine an example of the printers' art as has been seen for many a day. Mr. Geo. Norton, whose headquarters are with the Sunset Publishing Co., San Francisco, is the designer of this catalogue and he deserves credit for the artistic way in which he has gotten it out.

The new Wybro lists have been distributed through the mails, but if any one interested in panels has not received a copy they should be sure to get one. White Brothers will be very pleased to send them.

Success of Contractors' Equipment Department

Parrott & Co. of San Francisco, Los Angeles and other coast cities are meeting with much success in handling contractors' materials and building supplies. The business has gone ahead with such strides that expansion has been found necessary. During the past month the company has leased a splendid warehouse site at Fifth and Bluxome streets, San Francisco, with spur track privileges, formerly occupied by the Holmes Lime Company, and which will be used by the Contractors' Equipment Department, in conjunction with the manufacture of Collins interlocking steel studding for fireproof partitions.

THE ROEBLING CONSTRUCTION Co's



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NEW YORK CHICAGO PHILADELPHIA MONTREAL GLASGOW

Mr. C. A. P. Turner Successful at Vancouver.

Announcement is made of the results of the competition inaugurated by the city of Vancouver in connection with the design and construction of the proposed Georgia-Harris street bridge. The successful design and estimate were submitted by Mr. C. A. P. Turner, of Minneapolis and Winnipeg, whose bid for a steel and concrete bridge was $431,600 and whose fee based on that amount will be $22,400. The prize of $750 attached to the second place in the competition went to Messrs. Waddell & Harrington, Kansas City, Mo., whose design and estimate involve an expenditure of $485,300. Messrs. Wilson, Lake & Bentall, of Vancouver, secured the third prize of $500, with an estimate of $533,330, and Mr. A. E. Stone, of Vancouver, the fourth prize of $250, with an estimate of $521,711.

The duties which are to be assumed by Mr. Turner for his five per cent engineering fee are defined as follows:

1.—Prepare all plans and submit a duplicate set for the city engineer.

2.—Provide all engineering assistance, including transit men, linemen, rodmen and chainmen.

3.—Provide a first class, fully qualified steel and concrete expert.

4.—Furnish a guarantee of design for the sum of $100,000 bond.

5.—Open office and supply all furnishings, staff, etc.

6.—Prepare all specifications in triplicate.

7.—Be fully responsible for all the work until the final completion of the undertaking, and its acceptance by the council.

8.—Allow free access to office and works in progress to the city engineer or authorized members of his staff.

9.—Undertake this work for a lump sum.

10.—Furnish all shop inspectors for steel work.

11.—In the event of the bids overrunning the engineer's estimate, the council shall have every right to cancel the contract without compensation to the engineer for his plans, etc.

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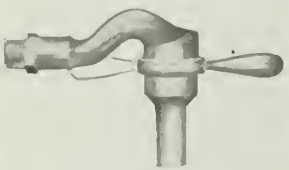
"QUICK" Faucet
Is Instantaneous and Anti-Splash in Action



By half turn of lever a solid stream of water is delivered from this Faucet without a Splash.

The 20th Century time saving boon for every kitchen

Write or telephone to us and we will show same.

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CHEMICAL AND PHYSICAL TESTING LABORATORIES

Another Pacific Coast Manufacturing Plant

Announcement is made of the incorporation under the laws of Oregon of the Hester Store Front Manufacturing Company. The company has been given the right to manufacture the Hester Store Front System and sell in Oregon, Washington, California, Idaho, Montana, Wyoming, Utah, Nevada, New Mexico, Arizona, the Hawaiian and Phillipine Islands.

The company has established in Portland a complete plant for manufacturing all materials necessary for modern store fronts. A representative of the company has this to say about the corporation and its plans:

"It is an important fact that the Hester Store Front Manufacturing Company is the only manufacturer of store front construction in this territory, a fact that will assure architects, contractors and merchants of prompt deliveries and avoidance of delays occasioned by freight shipments on Eastern materials. Besides, all customers will have the satisfaction of knowing such money will be kept and circulated on the Pacific Slope.

"The Hester System of Store Front Construction is the outgrowth of a plan of metal store front installation originating in 1893, and incorporated in the present form of some bars now manufactured by the Hester Store Front Manufacturing Company, and the originators of that construction are now numbered among the above named company. Therefore that system was the original construction by which store front glass was set between two metal bearing surfaces.

"The Hester System of Store Front Construction, after being thoroughly tested for years by architects, engineers, contractors and merchants, has been approved and endorsed as the neatest, simplest in construction and the most practical in design of any store front construction offered to the commercial world. The Hester System is so simple of construction that it can be readily installed by any mechanic.

"It provides the largest exposure of glass with the narrowest setting (bars), consistent with strength and durability; its friction grip secures the lowest plate glass insurance possible; by its ventilating and drainage system it is frost, sweat and dust proof, and makes window cleaning easy. It is painless; rot and warp proof, made of copper, brass, gun metal and nickel.

"Leading merchants declare that sales are made and attributed in the following manner:

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SPECIAL FURNITURE and CHURCH FIXTURES of every Description
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When writing to Advertisers please mention this magazine.

Store windows	75%
Salesmen	15%
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	100%

"Direct attention is being given to all Oregon contractors from the factory at Portland and with its local agencies in Spokane, Seattle, Tacoma, San Francisco, Los Angeles, San Diego and Salt Lake City, the company reports a large and popularly growing business."

The Western Builders' Supply Company, 680 Mission street, San Francisco, is the selling representative for Northern California. A forty page catalog fully illustrating and describing the stock designs of the company's materials is now being distributed.

A Product of Merit

Mission Sanitary Wall Paint, manufactured by the Stockton Paint Company of Stockton, Cal., is a product of proven merit as demonstrated by its popularity with architects and contractors. From the day this wall finish was put on the market it has given excellent satisfaction and has been specified and used on schools, hospitals, churches, jails, apartments and residences where discriminating owners have demanded sanitary walls and ceilings—surfaces from which spots and stains could be easily and quickly removed with ordinary soap and water and which would not crack or rub off.

Mission Sanitary Wall Paint is made in sixteen colors. It dries flat and its soft, rich colors—more beautiful than water colors—admit of innumerable strikingly beautiful combinations which forms tasteful schemes of sanitary and economical interior decorating. The Stockton Paint Company will be pleased to answer all inquiries regarding Mission Sanitary Wall Paint and furnish samples.

Distance Lends Enchantment

The difficulty which a daily builders' journal of San Francisco seems to have in gathering either new or accurate information for its readers seems to be offset (in their eyes at least) by a three column article in their issue of November 6, 1912, giving the latest building reports from South Africa, covering the Johannisburg and Natal Districts. This information will tend to keep the cables, mails and steamships busy as we doubt not the competition between San Francisco contractors will be most keen.

NOTICE TO CONTRACTORS.

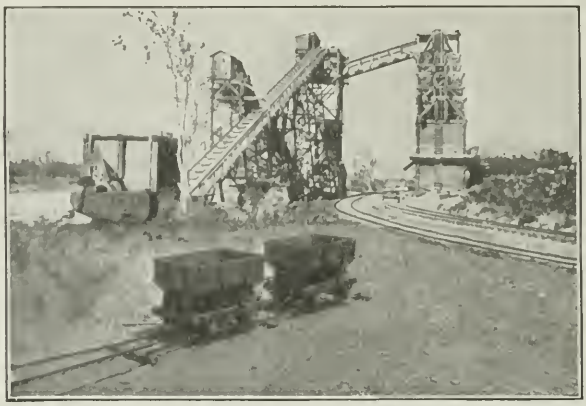
Office of Yosemite National Park, Yosemite, California, November 30, 1912.—Sealed proposals, in duplicate, will be received at this office until 2 o'clock p. m., February 1, 1913, for the construction of four reinforced concrete arch highway bridges as follows: Bridge No. 1, one arch 105 foot span, 12½ foot rise, and 36 feet clear width. Bridge No. 2, one arch 20 foot span, rise 3½ feet, width 17½ feet over all at crown. Bridge No. 3, same dimensions as No. 2. Bridge No. 4, two arches, 20 foot span each, rise 3½ feet, and width 17½ feet over all at crown. Bidders must bid on each bridge separately, but may give a lump bid on all four bridges, or on any two or any three of the bridges. The bridges are to be constructed on the floor of the Yosemite Valley, and it is suggested that prospective bidders personally inspect the various sites before submitting proposals. Each bid must be accompanied by certified check for $500 payable to the order of the Secretary of the Interior, which sum to be forfeited to the United States should the bidder fail to enter into contract with satisfactory surety to the full amount of his bid within 30 days from notice of award. The right is reserved to reject any and all bids and accept bids on any one, two, or three of the bridges, as may be deemed most advantageous to the Government. Plans, specifications, and blank forms of proposal may be obtained on application to the Acting Superintendent of the Yosemite National Park, Yosemite, California, and may be seen and examined in the U. S. Engineer's office, Room 405 Custom House, San Francisco, California, and the office of The Builder and Contractor, Los Angeles, California. Wm. W. Forsyth, Lt. Colonel of Cavalry, Acting Superintendent, Yosemite National Park.

Approved, Lewis C. Laylin, Assistant Secretary of the Interior.

Phone Douglas 4969

GABRIEL MOULIN
Photographer

153 Kearny Street - SAN FRANCISCO
Wiley B. Allen Building



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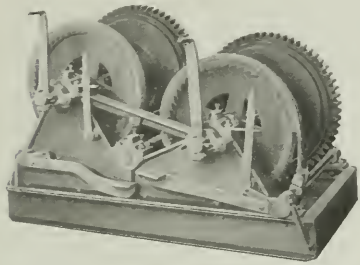
Manufactured by **The Liquid Stone Paint Co., San Francisco, Cal.**

The Wallace Concrete Machinery Company Expands

Owing to the increased amount of business that the Wallace Concrete Machinery Company of Los Angeles has received from its San Francisco territory, it has been found necessary to establish a branch in San Francisco.



The branch will be in charge of Mr. Edward Crowley with headquarters at 669 Monadnock Building. Mr. Crowley is a Civil Engineer who has had several years experience in concrete construction and in handling concrete machinery, having been identified with some of the largest construction work on the Coast, and will be glad to submit plans and estimates for the necessary equipment to handle any kind of concrete construction.

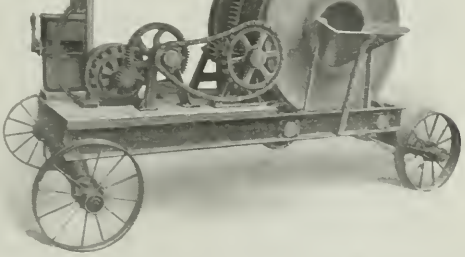
It is the intention of the company to carry in San Francisco a complete stock of its machinery and repair parts for the accommodation of its customers.

The Wallace Concrete Machinery Co., has been manufacturing exclusively the line of concrete machinery for the past eight years, and has established among the contractors on the Pacific Coast an enviable reputation for the quality and efficiency of its machinery. Its large plant in Los Angeles at Central avenue and Twenty-ninth street, is equipped with all modern machinery and conveniences for manufacturing a standard line and also any special equipment a contractor may require on short notice.

They have the distinction of being the only manufacturers of a complete line of concrete machinery west of Milwaukee, manufacturing as they do everything from wheelbarrows to traction mixers. Their standard mixers are batch machines of the non-tilting, gear driven type, having capacities ranging from 3 cubic feet to 35 cubic feet, and is furnished either with or without loading devices.

The Wallace concrete skip having capacities from 6 to 20 cubic feet is the most popular skip on the Pacific Coast owing to its great efficiency and exclusive design, being of the type which operates on two steel rails in 10-foot sections, thus eliminating the erection of a costly square tower of lumber. Their lumber which may be operated on the same rails as the skip, is a great time saver in hoisting reinforcing steel or forms.

The friction hoists manufactured by them, range in size from a small 10-inch single drum up to large double drum hoists of 5,000 pounds capacity. The reversible brick friction hoists operate at a speed of 500 feet per minute, and their line of barrows, carts and hoppers is complete in every way.



The Wallace Concrete Machinery Company equips its machinery with standard steam, gas, or electric power as specified by the purchaser.

MORTENSON CONSTRUCTION CO.
CONTRACTORS FOR STRUCTURAL STEEL AND IRON
H. MORTENSON, Pres. CHAS. G. MORTENSON Vice Pres. and Mgr.
OFFICE AND SHOPS: CORNER 19TH AND INDIANA STREETS
PHONES: MISSION 5033—HOME M 3916 SAN FRANCISCO, CAL.

A Motor Street Sprinkler

THE city of Pensacola, Fla., is using for sprinkling its streets a motor sprinkling car comprising a cylindrical tank holding 450 gallons, mounted on a commercial chassis of 3,000 pounds capacity. The car is designed to do the work of several horse-drawn sprinkling carts, at a great saving of time and labor. The amount of water spread over the road is regulated by the driver by means of levers at the driver's seat. One great advantage of the motor sprinkling car is said to be that it does not puddle the roads the way the ordinary slow-moving carts do, but wets the ground thoroughly while traversing the route in less time than the horse-drawn vehicle.

The chairman of the Board of Public Works of Pensacola is well pleased with the operation of the car, and comments upon it as follows:

Previously we ran two 550-gallon two-mule team sprinklers, and did not secure the service we required, and we had to be always careful not to overheat the mules. After a very careful investigation I put the matter up before my board, with the result of getting an automobile sprinkler, and after running for several months in a gas car, without any adjusting and with the meager instruction I gave him, we find the service far beyond what we ever expected. It covers all the territory of the other wagons, and a great deal more, and the cost of running is so little in comparison that we feel that it has been a most judicious investment. I would say, also, that besides this regular work it is used many times at night on extra work in sweeping and cleaning the streets.

Automatic Sprinklers for the Skyscraper

Modern skyscrapers have presented some engineering problems to automatic sprinkler engineers. It was desired to install an equipment on six floors of the new Bankers' Trust Building in New York, 500 feet above the sidewalk, covering from the thirty-second to the thirty-seventh floors, inclusive, which are used for storage of records. The static pressure between the thirty-seventh floor and the pumps in the sub-basement is approximately 250 pounds a square inch, so that to supply a workable pressure for the sprinklers at that height required a pressure at the pumps of not less than 300 pounds. The primary supply is from 1250-gallon steel pressure tanks located on the thirty-second and thirty-seventh floors, with a second supply from high-pressure pumps in the basement and a third supply from standpipe connections for the city engines.

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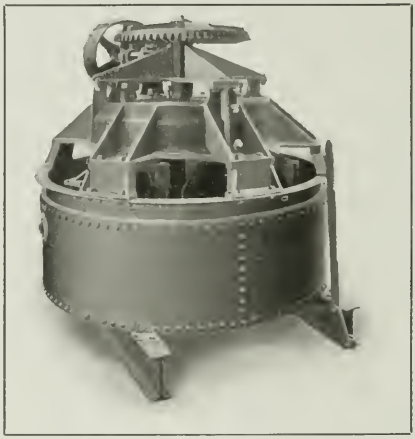

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From various quarters come notices of public meetings in protest against the smelter plants of the Selby Smelting & Lead Company, claiming that they are "nuisances." The Selby Company's troubles do not come singly, for we are in receipt of a letter from the National Lead Company, signed by John P. Neville, vice-president and general manager, disclaiming any but a slight connection with the Selby outfit. The notice reads as follows:

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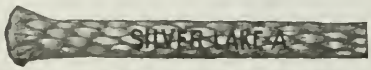

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Whitton on the Ideal School

The ideal school should be the City Hall of the neighborhood and the center of the entire life of the community in which it is situated, was one of the statements made at a recent meeting of the Sacramento Civic League by Frederick Whitton of the Wilkis Polk Company, which has been appointed advisory architect to the Sacramento School Board.

Whitton, who was at one time a teacher, gave his conception of what should be embodied in an ideal school. In order to be of the most efficiency the modern school plant in a city should occupy a tract of ground not less than a city square, the architect declared.

The buildings should be numerous, fireproof and preferably not more than one story in height. There should be a garden plot, a plot of ground for farming on a small scale and room for a well equipped playground.

In the school buildings should be taught hand training, domestic and vocational work, such as dressmaking, clay modeling and carpentry. As little attention as possible, Whitton said, should be given to machine work, as that would come later in the High School.

Then there should be gymnasium work, including the teaching of swimming to the pupils. The gymnasium could be used for other purposes and might be converted into a hall when not used in other ways.

"There is nothing theoretical about the school I have sketched," said Whitton, "for many cities already have just such plants. The modern school, according to my conception, should be a meeting place for the parents of the children and the other people of the community. Of course, Sacramento does not need all that I have described at present, but eventually there will be an urgent need for a system that will reach the children and will provide the things necessary to fit them for life."

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"Richards, McCarty & Bulford, Architects, Columbus, O."

Westward, Ho!

The following notice appears in our contemporary, the Western Architect and Builder of Cincinnati, Ohio:

New Name Wanted.

It is the desire of the publishers of this journal to change the name at New Year. When founded it was the farthest west of any architectural and building paper. Conditions have so changed that the present name seems no longer appropriate.

Suggestions of a suitable name from our readers will be appreciated. The party first suggesting the name that is finally adopted will be suitably rewarded.

This recognition of the absolute fact that the Eastern Architectural journals have no circulation to speak of and less influence in the Western country is to be commended. Certain Eastern manufacturers are slow to realize that Ohio is a very great distance from the Pacific ocean.

The great section west of the rockies, embracing an area equal to one-fourth of our entire country, is able to issue its own technical and literary publications; journals which are acquainted with Pacific Coast conditions and in touch with the men who are engaged in business there. It would be more appropriate for the Ohio publication to call itself the "Eastern Architect," for it is now not even centrally located.

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Contents for January

	PAGE
The New "Times" Building, Los Angeles — *Krempel & Erkes, Architects*	*Frontispiece*
Repeal of the Tarsney Act is Deplored — *Walter Cook, President A. I. A.*	47
Architecture as a Fine Art — *Carl F. Gould, Architect*	51
Some Features of the San Francisco Girls' High School Building	57
Fifty Millions for Construction Work in San Francisco This Year	61
Concrete Cottages in California	67
The Completed Kern County Court House	74
Program for the Sacramento School Competition	75
Solving Los Angeles' Greatest Waterproofing Problem	79
Improvements in the National Parks of California	80
A Concrete Warehouse with Pleasing Architectural Treatment — *Wm. H. Crim, Jr., Architect*	81
Value of Washed Sand and Gravel in Concrete	84
Norman Shaw as an Architectural Critic	86
The Skyscraper of To-Morrow — *Theodore Starrett*	88
An Experience in School Building Competitions — *Walter Cook*	91
The Finishing of Hardwood Floors	92
Some Good Hints About Decorating Modern Bathrooms	94
Architectural League of the Pacific Coast	96
Underwriters' Problems of the Panama-Pacific Exposition — *O. P. Shelley, C. E.*	101
Convent School Designed in Mission Style	106
Among the Architects	111
Editorial	114
State, County, and Municipal Engineering	116
Heating and Lighting	118
By the Way	126

(Index to Advertisements, page 8)

THE NEW LOS ANGELES TIMES BUILDING, LOS ANGELES, CALIFORNIA
Architecture of the Old Building Dynamited by the McNamara Bros., Has Been Preserved to Some Extent
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Pacific Coast States

VOL. XXXI. JANUARY, 1913. No. 3

Repeal of The Tarsney Act is Deplored*

By WALTER COOK, President of American Institute of Architects

THE one thing that stands out in the history of the Institute is the constantly increasing interest of our members in its aims and its aspirations, and the constantly increasing unity in their views as to the best means of attaining these. Our one purpose is the encouragement of the best architecture, in every sense of the word; any advantage to the architects themselves—the improvement of their position in the community or of their material interests—follows as a matter of course; but this is not first in our minds. During the year which is nearly at an end a great deal has been accomplished especially in furthering that education of the public toward a correct understanding of what we seek, which is our first and most pressing necessity.

If the results of these efforts of ours have come but slowly it is perhaps in part our own fault; for astonishing as it may seem, this public, or the best part of it, has listened to us with interest and good will, and in the great majority of instances has recognized the force of our arguments and the truth of what we have advanced. One example of this, and the most important one perhaps, has been the conduct of the Competition for the Capitol of the State of Missouri. Beginning as it did with certain conditions laid aside, which were, as we believe, not for the best interest of the state, the Capitol Commission invited a delegation of the Institute, which had called its attention to these conditions, to visit them and confer with them. This conference was a most satisfactory one, and the result was a competition for this great public building conducted in a manner which was eminently judicious, and which bids fair to add one more to our great and beautiful monuments. And recently the Capitol Board has sent its thanks to the Committee of the Institute whose members advised with them. Certainly all our thanks are due to these enlightened gentlemen for the aid they have given to good art, and for the example they furnished to our whole country. And this is only one—the most prominent it is true—of many such incidents in affairs great and small, which go to prove that after all our countrymen are broadminded and patriotic and only need to have the truth shown them.

Unfortunately we have to record one experience of a quite different nature. The Tarsney Act, authorizing the designing of our government buildings by architects, has been repealed; and for the moment these great monuments of our country have been handed over to an official factory, to be turned out by the yard; for whatever the talent and the ability of the Supervising Architect of the Treasury, this is what must of necessity result. Nothing of this sort has ever happened in any civilized country, so far as I know, unless our own unhappy experiment of years ago may be considered an exception. It is quite unnecessary for me to speak of the so-called arguments which were employed in urging this repeal—the plea of an economy

*Extract from opening address at the Forty-sixth Annual Convention held at Washington, D. C., December, 1912.

which has we believe been shown not to exist, and certain others which displayed such an almost ludicrous ignorance of the whole subject, that we can but shrug our shoulders and say with Figaro, that we hasten to laugh, lest we be obliged to weep. But if any of our special guests of this year—sculptors, painters or authors—are unacquainted with them, we hope they will without delay read certain of the official documents which have been published, for they will find them most delectable. And they will certainly appreciate the logical sequence of this repeal—the establishment shortly of a special department of the government for the manufacture of all sculpture and decorative paintings, followed rapidly by still another, whose duty shall be to turn out all odes, sonnets or lyric verse which may be needed to celebrate the achievements of our enlightened Republic.

However, we are hopeful and optimistic; we have faith in the sober second thoughts of our representatives in Congress; and we look forward with confidence to legislation in the near future which will not simply re-enact the Tarsney Act—for it had its imperfections—but will give us something even better for our country and its art.

All of our experiences, be they victories or defeats, only serve to accentuate the need of which I have already spoken—the need to do all we can to enlighten our fellow-citizens in those matters which are our special province; to awaken their interest and better their understanding of what we do and how we do it. And the Institute during the past year has given its best attention to this subject. It has established its own special organ in the Journal; the first number of which is before you, and for which I bespeak your earnest support and its new Committee on Public Information has done good and faithful work, which will I feel assured result in much good.

And here I wish to thank the earnest and hardworking members of the various committees to whom the affairs of the Institute have been intrusted, and to whom all of us are so much indebted. Nothing has more impressed me than the disinterested devotion to our common cause of so many busy men, who have willingly sacrificed for it their time and given to it their best service. I trust all our members will realize this, and that all will be eager and willing to add their own efforts whenever the occasion demands it. Our growing influence and power in the community rest upon this—that we all work together for the good cause.

As for the architectural work of our country and our time, to which we are devoting our lives, it moves on apace. Every day sees new and important buildings, and we admire and blame and criticize as the mood is upon us. It is very hard for us, who are so much in the thick of the battle, to see clearly and to give any calm-minded judgment upon it as a whole. But within a few months I have had the good fortune to talk with two fellow-architects of acknowledged eminence from across the water. Their verdict was one of enthusiastic praise for our achievements; and they made comparisons between what we are doing here, and what is done in other countries, which were most flattering for us. So I think we are justified in some self-congratulation.

* * *

The following report on the President's address was submitted by a special committee and approved by the convention:

The President in his address makes the comment that the significant fact in the history of the Institute is the constantly increasing interest of its members in its aims and aspirations, and the constantly increasing unity in their views as to the best means of attaining these. The status of the architectural profession is still ill-defined in many parts of the United States. The issues with which the architects have had to reckon are complex and are rooted in stubborn conditions. Environments most various have wrought upon the ideas and the ideals of the architects themselves. It would be difficult to exaggerate the

untoward character of some of these environments. Some of us—perhaps most of us—have been so closely involved in puzzling and trying situations that we have failed to see the entire field in its proper perspective and some of us have been prone to take a somewhat pessimistic view of the immediate outlook for the profession. It is therefore a cause for congratulation to the Institute that its President, a man of wide experience, high ideals, and singularly temperate mind—has been enabled, amid all the perplexing questions with which the board has had to deal, so to preserve his sense of proportion and his wise optimism that he can deliberately affirm the constantly increasing interest of the members in the aims and aspirations of the Institute and, through all the divergencies of opinions, can note a constantly increasing unity in the views of the members as to the best means of carrying out the high purpose of the Institute.

Your committee believes that the President stands on firm ground when he asserts that, during the past year, marked progress has been made in educating the public toward a correct understanding of what we seek. But in this connection your committee cannot forbear to lay still further emphasis on the fundamental truth—that a genuine solidarity of opinion in the profession itself as to professional ideals is an indispensable prerequisite to a proper recognition of status in the eyes of the public. The architects must themselves analyze and decide questions of ethics as between one another and as between themselves and the public with dispassionate forethought and with an eye single to the highest interests of the profession and of the entire community. The first step toward the education of the community by the architects must be the education of the architects themselves.

The poise of mind of your President is equally in evidence in his reference to the repeal of the Tarsney Act, which he treats as a disagreeable episode to be viewed philosophically rather than as a tragic finality calling for fierce invective. Viewed largely, man and his governments and institutions are but a passing show; and, if the tides of a democracy are sometimes destructive, we do well to remind ourselves that only in a society capable of change is there the possibility of progress. A generation of new law-makers—like a generation of new children—has newly to be educated. The Institute's work is cut out for it. It hardly requires that we recommend a resolution instructing the President and the Board of Directors to take action in the premises. We venture to usurp the authority of this convention and to advise the President and the Board of Directors that it is the sense of the Institute that the President and the Board of Directors should, at the earliest time, take steps to prepare or to cause to be prepared and, in due time, to submit to the proper Congressional Committees a bill for an act that shall not only replace the Tarsney Act but shall—as your President has said—"give us something even better for our country and its art."

REPORT OF THE COMMITTEE ON TOWN PLANNING

It is gratifying to note the continued interest and the growing appreciation of the value of town planning. During the past year many cities in the United States and Canada have turned their attention to the subject, some are taking active steps to improve their water fronts, solve the railroad problem or to plan civic centers. Others are turning their attention to suburban development and in a few more ambitious instances comprehensive plans are being prepared for the growth and development of the entire city.

The activity in the various societies and civic bodies continues and lectures on city planning and meetings devoted to the subject are on the increase. The result of these activities has been to interest the city authorities themselves and it is encouraging to note that in numerous cases the local city governments have espoused the idea and recognizing the value of technical advice have appointed expert advisers to guide them in the development of their cities.

It was the thought of your Committee that we could perform a service to the members of the A. I. A. by suggesting some general ideas that might serve as a guide for municipalities in the preparation of their plans and in the adoption of the necessary legislation. The authorities as a rule are somewhat at a loss to know how to proceed and the first steps are the most difficult.

Much interest has been shown in the Town Planning Act now in force in England and it seemed possible that this act or a modification of it might serve as a basis for a similar law that will be suitable to American cities. After consideration, however, this did not appear feasible. The English Town Planning law provides for a central body possessing absolute power who can criticize and control the plans of all English cities which must be presented to it for its approval. This does not appear to be possible in our country. The laws in each state are different and each Town Planning Act would necessarily have to be drawn to conform to the state law. Lately a very strong movement in favor of what is called "home rule" for cities has manifested itself so that a general state law governing the powers of a city to make its plans would, we think, be very unpopular. The conditions, not only in different states, but in different cities vary so greatly that we believe it would not be well to attempt to frame a general law.

The regulations that obtain in France and in Germany seem entirely inapplicable to our form of government and apparently it is advisable for our cities to make their own rules and regulations.

It has been found to be extremely difficult to obtain documents and pictures that relate to city planning and there is a constant demand for such data. We suggest that the A. I. A. enlarge its present collection of lantern slides and procure views of the best examples in Europe and America. Many pictures can be obtained showing suburban development and garden cities, also views of civic centers, street intersections, settings for building, water fronts, railroad terminals and similar subjects illustrating problems connected with city planning. These might be loaned to members of the Institute to assist them in their work, or copies might be made at a nominal cost and sold to those interested.

It is most desirable that some central library should collect plans of important cities, properly drawn to scale, and there is such detailed information that is constantly required. Undoubtedly the possession of this library would be of great value to our members and it seems to your Committee that the A. I. A. should take immediate steps to collect maps and documents which would form the nucleus of such a library. We believe that the cost might be met by private subscription. The value of this can hardly be overestimated. The cost of additional lantern slides is easily within our means and would be a very great service to members who wish to deliver lectures on city planning, but we strongly urge the foundation of a real reference library on city planning.

(Signed) ARNOLD W. BRUNNER,
Chairman.

* * *

At the 46th Annual Convention of the A. I. A., held in Washington, the election of officers resulted as follows:

President, Walter Cook, New York; 1st Vice-President, R. Clipston Sturgis, Boston; 2nd Vice-President, Frank C. Baldwin, Fredericksburg, Va.; Secretary and Treasurer, Glenn Brown, Washington, D. C.

Directors for three years—Burt L. Fenner, C. Grant LaFarge, H. Van Buren Magonigle, New York.

Auditor—Robert Stead, Washington, D. C.

Fellows—Wm. D. Austin, Boston, Mass.; W. Dominick Bones, Cleveland, O.; Henry Clay Carrel, Walter B. Chambers, New York, N. Y.; Clinton Day, San Francisco, Cal.; Wm. Adams Delano, L. C. Holden, New York, N. Y.; Walter G. Peter, Washington, D. C.; Arthur Wallace Rice, Boston, Mass.; Charles A. Rich, New York, N. Y.; Horace Wells Sellers, Philadelphia, Pa.; Frank E. Wallis, New York, N. Y.; Arthur F. Woltersdorf, Chicago, Ill.

The honor of "Fellow" of the American Institute of Architects, to quote from the by-laws, "is conferred upon a member who is a citizen of the United States, who, in the opinion of an authorized Jury of Fellows, shall have notably contributed to the advancement of the profession in design, construction, literature or education."

Architecture as a Fine Art

By CARL F. GOULD, Architect

MANY interesting points on architectural design have been aroused in my mind by the address of Mr. Willcox, which was presented at the last annual meeting of the Washington State Chapter of the American Institute of Architects.* I shall attempt to summarize them by formulating the following questions:

Are we as architects to the best of our capacity leading in the right direction the adjustment of architectural design to our present day needs? Are we not overhampered by traditional methods of design and do we not fall into the habit too easily of using historic precedents rather than examining each problem as it presents itself in the light of present day conditions and solving it in terms of present day needs?

In our moments of youthful enthusiasm, and especially at the time when we emerge from our student days into the possibilities of actual practice, when we are able for the first time to put into execution our ideas which have been so long fermenting, we come against conditions which we least expect and which attack our preconceptions at this point and that. We may give in here and there, and we may stand out and as best we are able, but the final result contains very little of the original idea inspired at our first moment of enthusiasm. We are fortunate if the result has any semblance whatsoever to that original spark. Tradition is a very heavy weight for the man of the now and present to carry; in fact, it probably never happens that he rids himself entirely of its burden, even at those rare moments when the greatest creative genius known in the history of the world has produced his best creative efforts.

It is only by the constant and insistent maintenance of our ideals at times when the burden of tradition seems most overbearing that we can hope to gain a little headway against the disproportionate importance of the present. We can possibly do this as individuals, some perhaps more ably than others, but we cannot do it with the same persistent force, with the same consistent energy, unless we do it with each other's assistance and keeping the subject of architectural expression alive by the interchange of ideas through meetings and discussions such as these.

I will attempt only a few observations, and I will take for my subject as suggested by Mr. Willcox's paper, "Architectural Styles." Do architectural styles exist today in the same sense they existed in previous civilizations? As we look down the architectural history of the ages, we have in our minds distinct and clearly defined divisions of the forms of expression dividing them-

*Mr. Willcox's address appeared in the December Architect and Engineer.

selves into so-called periods; each period represented by forms, ornamental and structural, quite distinctive from that of the preceding period. By commerce or by reason of economic conditions, certain geographic sections grew into prominence and these sections or countries evolved an architectural expression largely peculiar to themselves. There was then between these countries very little communication. The interchange of ideas only occurred at rare intervals, either through an invasion or through war, and at the periods of readjustment we find that a style or form of architecture evolved in one community rapidly spreads to other communities. We find traces of the Egyptian and Syrian detail in the work of the Greeks. The Romans developed their architecture from the impetus received and the details transplanted by the Greeks. The French Renaissance originated from the mingling of the knowledge received through the revival of classical study and the traditions of the Gothic. Each nationality at each one of its historic epochs gave architectural expression through a distinct style of its own.

Since, however, communication between countries has become so comparatively simplified and the interchange of ideas so common, either through writings, through illustrations, or through photographs, the situation seems to have changed. Almost as soon as a suggestion is offered in New York, it becomes known throughout the country. The styles originating in Austria or Italy find their way to us in a short period of time. The result is that either consciously or unconsciously all the world is gradually being brought within one radius of ideas. It seems improbable, therefore, that ever again will any locality or any country or any section of any country be able to develop a style which can be considered distinctive and peculiar to itself.

As customs and traditions become unified the world over, so must the architectural expression become unified. Witness the introduction of the bathtub in French and European countries. The traveler, especially the American, is bringing about their introduction, and gradually they become a necessity in the community and the foreigner himself begins to install them. The minor conveniences of the American equipped houses are being copied in England and European homes. The Viennese, as well as the English, types are influencing the design of our houses as well as our designs are influencing theirs. I venture to predict that within a few years the arrangement, the equipment, and the detail or outward form, of business blocks, dwellings, schools, etc., will approach each other much more nearly in these different countries than they do today.

It would seem to me that there will never again be a so-called style of architecture marking an historic period, such as have marked periods of the past. What changes will occur in the future will be in two directions; one the development of types for distinct classes of buildings, the other the variations that will occur due to the conditions of variation of different localities. The multiplicity of materials of construction, the constant change and increase in the requirements, are constantly making the task more intricate of digesting these conditions and resolving them into an harmonious whole, in which mass, proportion, silhouette, color, texture, fitness and scale are all given their true value. Architecture more than ever requires the skillful handling of the master mind, and with the whole historic world to draw upon and the entire modern civilization to assimilate, it is little wonder that we find ourselves confused.

In spite of all these difficulties with which the architect has had to con-

tend, I believe that we are today approaching our problems and possibly solving them as rapidly as have previous civilizations at their moments of highest development. It was not more than thirty years ago that Richardson, with all his powerful personality, imposed a character upon commercial buildings which was totally unsuited and under which the type labored until D. H. Burnham had the courage to reduce the problem to its lowest terms. Great heavy reveals, circular headed windows encumbering the steel frame, gave way to the incrustations of terra cotta; walls were turned into glass. We are now free to solve the problem and our commercial buildings are evolving naturally at the present day, and the detail at last is beginning to express their construction, as for example the new Woolworth building in New York city.

The schoolhouse has gone through the same process, and it has likewise been reduced to its lowest elements. The problem has been stated in its simplest terms by Wheelright. Glass areas and blank wall spaces are accepted by the designer of today and they are being assimilated into the design, as witness, for example, the Snyder schools in New York city. Here again the type is becoming crystallized and the character of detail is working out in forms that are best suited for these particular problems. Probably the same cannot be said about church edifices, as traditional religions prevent the problem of church building being presented in its simplest terms. Witness the new Baptist church on Harvard avenue, which is in detail perpendicular Gothic and in plan and arrangement is something that never existed at the time this detail was evolved; we might say this design has not been thoroughly assimilated. Domestic design is perhaps not hampered as much by the burden of tradition as the ecclesiastical, but it seems to be more subject to tradition than is commercial or school architecture.

Should we not aim, therefore, as far as it is within our power, to eliminate the baggage of precedent and analyze each problem in its lowest terms? What, for instance, are the materials available? What the climatic conditions, the customs, of the social group? Taking our materials, whether they are stone, terra cotta, cement or wood, and giving them the semblance of their own inherent character, not trying to make cement, wood and terra cotta imitate stone, but to give each material its own expression, considering also the problem of window openings, frankly admitting that conditions require the maximum introduction of light. Why, then, impose a style of architecture which, for the sake of being picturesque and recalling some historic precedent, is totally unsuited? Whether or not applied, exterior framing, imitating the half timber work of England, is false design, is a question that would offer an interesting field for discussion. The sleeping porch is a constant thorn in the architect's side and does not yet seem to have been fully assimilated, though we will admit that it never can become so? Who has the courage yet to accept the flat roof for domestic architecture with the methods of waterproofing and construction of today; is it not perhaps the true type? Should we not be able to use roofs for children's playgrounds, for tea gardens, or outdoor reception rooms?

An architectural problem approached in this light brings us against the question of what part should classic design and detail play in our modern everyday design. The possibilities this opens for discussion are great and I hope some one present may launch out and wade in. I am already over my head.

Architecture Defined

By DAVID J. MYERS*

ALTHOUGH I think that Mr. Willcox's most able address has many truisms expressed therein, still I confess that it strikes me that, in so far as contemporary American architecture is concerned, the tone of it seems rather pessimistic than optimistic. For instance, Mr. Willcox makes the following remarks in speaking of the sources of inspiration and the tendency in our day to copy historic types of architecture, developed outside of America under different conditions socially, climatically, etc. He says:

"If we look for a distinguished type which may without question be recognized as American, we are likely to find it in structures with which the educated architect has had little or nothing to do, crude structures void of any idea of, or attempt at scholarly design."

Now I beg to differ with him in regard to this assertion, for have we not during the past twenty-five years or so developed many distinctive American types which are not only far from being crude but are even distinguished and scholarly?

Have we not in America developed a type of architecture in our library buildings which is absolutely distinctive? You may say that the library of Sainte Genevieve in Paris is the prototype for the Boston public library, and that the latter is the father of many of the libraries in this country. Those of you who have seen the library of Sainte Genevieve and the Boston public library must ave been impressed with the lack of similarity in their expression, although somewhat similar in motif. The one cold and asture, and the other rich, yet restrained, suggestive of Italian renaissance in its court yard and detail, yet Italian—after having passed through the alembic of Mr. McKim's distinctive genius. There is no building just like it in any part of Italy to my knowledge, yet the claim put forward that it has one of the finest façades in the world is rarely challenged.

Have not our bank buildings a distinctive American quality about them, expressing dignity, wealth and security? Their prototypes may be the temples of classic times but they are no more slavish copies of them than were the Christian Basilicas absolute copies of their prototypes, the public basilica of the Roman Fora, and the basilical hall of private houses.

Our modern railroad stations might also be noted, stations such as the Union Station at Washington and the magnificent new Pennsylvania and New York Central stations in New York City, whose motifs no doubt are inspired by the study of the Roman thermae and the triumphal arches and gateways of Roman antiquity.

These great modern gateways to our cities, built to accommodate large concourses of people, seem to me to express their use; they are not mere copies of ancient architecture, but architecture vitalized by a fresh demand under new conditions.

Then again the office building of the sky-scraper variety, expresses (like the towers which were raised in mediaeval Italy by rich families for the purpose of defense), a condition which we may deplore but which in this commercial age of monopolists, exists. These great towers rising thirty and forty stories high reflect the spirit of our age, the spirit of avaricious aggrandizement by the right of might by the few fortunate ones over the rights of the many less fortunate. Such buildings as the Woolworth building and the West Street building in New York at least show

*Architect, Central Building, Seattle.

distinction, and if not the final word in regard to the solution of this problem, are certainly not mere copies of buildings designed in another age.

So I beg to differ with Mr. Willcox in this particular as I do not think that the types of buildings which I have cited can be classed as "synthetic archeology."

I am afraid there is a lot of truth in which he says in regard to our method of criticising contemporary architecture.

We are too apt to criticise a buildng on the platform of style rather than (to quote Mr. Willcox) "its essential and inherent qualities, mass, proportion, silhouette, color, texture, scale and fitness."

I think that such an attitude shows a rather narrow outlook; it places detail before the essentials which we have quoted, and indicates, I think, a lack of balance, or lack of training.

I do not have much sympathy with the conscious attempts that have been made of recent years to evolve a new architecture which discounts precedents, the heritage of the ages. Architecture must be evolutionary, not revolutionary.

The French school has probably done more to foster these great "principles" of plan and composition handed down from the ages than any other agency, and certainly America is more indebted to this school than to any other.

All great developments in architecture have followed periods of great material prosperity. Europe is pretty well built up now, but here we are just beginning to do our permanent building.

Here is a great field for the development of architecture; the seed that has been sown has already given signs of a blossom worthy of the soil.

So, if we assimilate these "principles" which have been culled from the work of ages, if we apply those principles intelligently to the new problems that are before us, not being satisfied with slavishly copying, but trying, trying hard, consistently, patiently, to add a link to the chain—then will we not be adding our little share to this gradual development, which is unconsiously evolving a new architectural style? Perhaps, who knows, the universal style.

* * *

The Curate's Plan

A clergyman, called suddenly away and unable to officiate at the Christmas services in his own church, intrusted his new curate with the duty. On his return home he asked his wife what she thought of the curate's sermon.

"The poorest I ever heard," she declared; "nothing in it at all."

Later in the day the clergyman, meeting his curate, asked him how he had got along.

"Finely, sir, finely," replied the curate. "I didn't have time to prepare anything myself, so I preached one of your sermons."

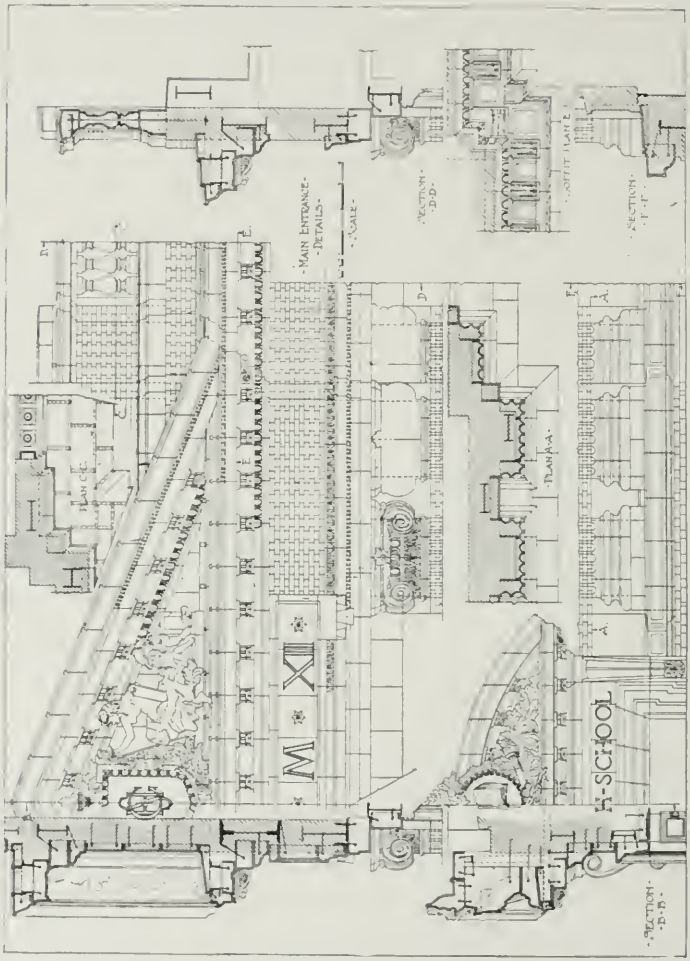
* * *

One on the Surgeon

"That was an awful mistake that surgeon made. The man he operated on didn't have what he thought he did."

"Didn't have appendicitis at all, eh?"

"Oh, he had appendicitis, all right, but he didn't have any money."



Terra Cotta Details, Girls' High School Building, San Francisco

Office of the City Architect

Girls' High School, San Francisco
Office of the City Architect

Some Features of the San Francisco Girls' High School Building

SOME of the best examples of good brick and terra cotta work on the Pacific Coast are to be found in the new school buildings of San Francisco. A notable structure built of clay products is the Girls' High School now being completed on Geary street. The plans of the building were prepared in the City Architect's office under the administration of George Colmesnil, taken further by Alfred I. Coffey and carried out under the present administration, that of A. Lacy Worswick. In its plan it follows a more or less conventional type. One rather regrets that it is not placed on a site offering a better chance to take advantage, in the way of open-air class rooms, of California's ideal climatic conditions. However, the land is sufficiently generous to permit a two-story and basement building, of irregular "U" shaped plan, with a principal (north to south) frontage of 264 feet on Scott Street, a north wing of 147 feet, and a south wing of 277 feet.

The court opens toward the east, the best exposure in San Francisco, because of prevailing trade winds which blow from the west. One questions the completely closed south wind with its consequent shading of the court—questions it, that is to say, until the rainy season comes, when it affords a grateful shelter against the heavy storms driving from the south. The court, asphalt paved, has at its center the customary flagpole for use in flag drills. The east boundary of the court is marked by well designed brick piers carrying a pergola.

The plan of the building is skilfully arranged for light and air and is convenient in co-relation of parts. Its circulation is excellent; there are five well placed stairs, and eight entrances. In the basement, the east end of the south wing is occupied by a gymnasium, unusually large for a girls' public school. It has ample windows on three sides, and on the fourth side locker rooms, etc., together with double exits that lead directly into the yard. The basement also contains recreation rooms, domestic science, dining room and its appurtenances, work shop, heating and ventilating plant, and storerooms.

Entrance Girls' High School Building, San Francisco
Terra Cotta by Steuger Terra Cotta & Pottery Works

On the first floor are the administrative offices, principal's and teachers' rooms, twelve class rooms, study rooms and lecture hall. Here, also, is the main floor of the auditorium—admirably placed. Indeed the auditorium is the feature par excellence of the building. Too commonly it is the practice to place the high school auditorium in the center of a blocky building, with circulation on three sides, the platform taking up the fourth, and having little, if any, light except from above. In this instance the auditorium is virtually a unit, completely divisible in its operation from the main building. Architecturally it is, of course, welded into the whole composition; but it is placed so as to occupy the east end of the south wing (above the gymnasium), and its isolation is the better accomplished by the introduction of a broad cross corridor, with double entrances and double staircases. The city school department has therefore at its disposal this fine auditorium, seating nearly a thousand persons, for any of its functions, whether directly connected with the Girls' High School or not.

Rear Entrance, Girls' High School Building, San Francisco, California

The second floor contains other class rooms, ten in number, science laboratories and lecture rooms, also a large library and study room.

The exterior of the building is carried out entirely in very light buff colored pressed bricks and semi-glazed terra cotta, to match. Perhaps a trifle more texture in the brickwork would have given a more satisfying result. Its façades are the not uncommon composition of high rusticated basement of brickwork with a two-story order of Ionic pilasters above; the whole surmounted by a balustraded parapet. In this instance the brick pilasters are fluted—the hard task of building flutes and fillets with a material somewhat unsuitable, and with the too frequent result—they fail of perfect accomplishment. It is to be questioned if flutes in brickwork are justifiable in any instance, whether built in perfect alignment or not; certainly no logical reason offers itself to the writer, while technical difficulties seem to be in the way. Furthermore, the necessarily great width of bays—common to all plans having class-room units and resulting from long ranges of windows—does not lend itself to happy proportion in the spacing of the order itself. An

Detail Over Main Entrance, Girls' High School Building, San Francisco, California
Photo by Walter Scott

unfortunate excess of width results, which even the beauty of the cast metal "remplissage" does not lessen, but rather makes more marked. Where this arbitrary broad spacing does not obtain, however, as in the central motif, and at the terminal pavilions, the treatment of the order is well studied and executed.

The entrances, generally, may perhaps be open to the criticism that they appear somewhat small. Taken separately they are interesting and varied in design, and they are certainly beautiful in execution, both as to the terra cotta and the bronze-covered doors.

Indeed, with the single exception of the pilaster flutings, the carrying out of the masonry is admirable. The terra cotta is true in the making, its mouldings are good, its modeling crisp and sparkling. In the sculptured pediment of the main façade the modeler found at his hand an opportunity which he did not fail to meet. In addition to the caps and bases of the order, terra cotta is successfully used for all the belt courses, the architrave and cornice—but not the frieze—of the main order, for the pediment and the crowning balustrade.

Like all the new schools in San Francisco, the Girls' High School is the last word as regards operative equipment: its plumbing, cleaning, heating, ventilating, and program-clock systems are of the most modern types obtainable.

* * *

Chemist (to crushed assistant)—Why, when I was 18 I managed my boss' shop myself, and I took over thirty-six pounds a week; I also had a business of my own at 23.

Assistant—That would naturally follow. But didn't he miss the money?

Fifty Millions for Construction Work in San Francisco This Year

THIS is going to be a splendid year for San Francisco from the standpoint of building construction. Fifty millions of dollars is a conservative estimate of the total sum that will be spent on construction work. Of this vast sum, fifteen millions will be expended on Exposition work while the City of San Francisco will disburse something like six millions for Municipal buildings. Private work, covering new hotels, theaters, apartment houses and office buildings, will call for close to thirty million dollars more. The United States government will also spend several hundred thousand dollars in new work at Fort Mason.

San Francisco architects, with hardly an exception, are enthusiastic over the outook. Some of the offices are already taxed with work while others have prospects of busy times by the end of the rainy season.

One of the busiest offices at the present time is that of Reid Bros., who have at least $1,000,000 worth of work in sight. This firm has completed plans for a two story store and loft building for the Misses Allyn to be erected on Mission street, also a Class C store and hotel building at Fillmore and Ellis streets for the Peninsular Realty Company. During the year they will make plans for another splendid building for the Sharon Estate and one for the Drexler Estate. The firm has also made sketches for converting the old Hale department store building into a modern hotel, and for the new First Congregational church which is expected to cost close to $200,000.

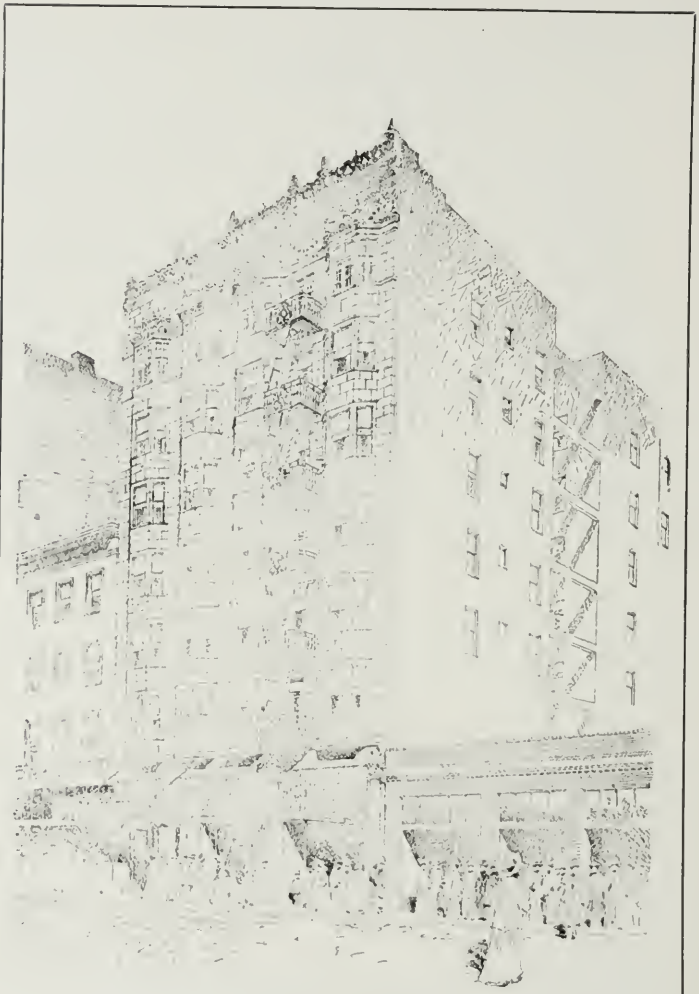
Architects Bliss & Faville have the addition to the St. Francis hotel which will cost upwards of $1,000,000. This firm also has under way the construction of the palatial Flood mansion. They have prospects of several high class structures, including an apartment house.

Architects William Curlett & Son expect to handle a million and a quarter of work through their San Francisco and Los Angeles offices this year. They have three buildings under way in Los Angeles and are completing the beautiful James D. Phelan residence in Los Gatos and an apartment house for J. J. McElroy in San Francisco. Contracts are being let now for a seven story steel frame Class C hotel to adjoin the Argonaut hotel on Fourth street for Mrs. Mary Phelan.

Architect Edward T. Foulkes will build an eight story steel frame addition to the Hotel Cort and he also has plans under way for a fine apartment house to be built in San Francisco, and a theater in Oakland. Mr. Foulkes has considerable work in Fresno and will erect a building for himself in the latter city.

Architect Will D. Shea will design the new home of the Young Mens Institute on Van Ness avenue near the Masonic Temple. This will be a five story Class A structure costing over $200,000. It will contain a large gymnasium, swimming tank, etc. Mr. Shea will also make plans for an addition to the Bank of Italy and for at least two more buildings for Santa Clara college. These will be the Engineering building and Science hall. Both will be of reinforced concrete.

Architect William H. Crim, Jr., has under construction two fireproof warehouses, representing a total cost of over $150,000. He has plans under



Hotel Building for Mr. A. W. Maltby, San Francisco
Albert Farr, Architect

way for a third warehouse to cost about $60,000. He is also building the new Wigwam theater in the Mission and he has recently let contracts for a store and factory building on McAllister street for Jos. Pisagno, and an apartment house for Wesley N. Hofeld at Page and Clayton streets.

Architect Ralph Warner Hart has recently let a contract for a Class A theater to be erected on Broadway, near Stockton street, for Miss Nellie Harris and he is now engaged in preparing plans for an attractive $60,000 apartment house.

Architect Charles Peter Weeks has a number of attractive residences on the boards, also a reinforced concrete hospital building for the Union Iron Works and a store building in the Richmond District.

Architect C. O. Clausen has several business buildings in Richmond, an apartment house in San Francisco and a town hall for Larkspur. His plans for the latter were accepted in competition with drawings submitted by a dozen well known architects.

Architect Arthur G. Scholz has about completed plans for a five story and basement steel frame Class C store and hotel building to be erected at Geary and Larkin streets for P. J. Gartland at an estimated cost of $125,000. The hotel will contain 200 rooms.

Architects McDougall Bros. have a three story brick and stone building for the San Francisco Medical Clinic besides several buildings for the Balfour-Guthrie Company.

Architect Benjamin G. McDougall is preparing the working drawings for a Class A store, office and theater building to occupy an entire block in the City of Portland and which will cost in the neighborhood of $800,000. David C. Lewis, a Portland architect, is associated with Mr. McDougall. The latter is also the architect of a $200,000 addition to the Shattuck hotel just commenced in Berkeley and a $200,000 twelve story store and office building for Messrs. Snyder and Carlson at Broadway and Telegraph avenue, Oakland. The same architect has recently let contracts for a three story brick warehouse to be built in Fresno for the California Pine Box and Lumber Company.

Architect George W. Kelham has recently let contracts for a fireproof factory and warehouse to be erected for the Gantner & Mattern Company on Mission street at a cost of $125,000. The same architect is letting contracts for Fresno's first skyscraper, an eight story building to cost $175,000 and which will contain stores and offices. The Sharon building on New Montgomery street, now being completed, was also designed by Mr. Kelham.

Willis Polk & Company have the million dollar Insurance Building under construction and this will probably be pretty well finished by the end of the year. Practically all contracts have been let. The same firm has been retained as architectural adviser of the new Sacramento schools for which a bond issue of some $800,000 was authorized last year.

Architect Frederick H. Meyer has under construction the handsome new home of the San Francisco Press Club at Sutter and Powell streets, besides several less pretentious buildings, including a warehouse and residence. Plans are on the boards for a number of new power stations for the San Francisco Gas and Electric Company. Plans have been completed and bids taken for a store building on Fourth street, near Mission.

Architect Sidney B. Newsome has completed plans and work has just been started on a three story apartment house at Jones and Union streets for F. Rolandi. Mr. Newsome also has considerable work in Richmond and Berkeley.

The Ford Motor Car Company has let a contract for a fireproof service building which will be erected at once at a cost of over $200,000.

Architects Righetti and Headman have a large hotel and several apartment houses that will call for a total expenditure of fully $500,000.

Architect William Mooser has completed plans and let part of the contracts for a nine story steel frame hotel and has made sketches for a five story building to be erected on the site of the old Nevada block at Montgomery and Bush streets. He also has plans for a five story Class C hotel to be erected on Antonio street, near Jones, for M. Wolfe.

Architect N. W. Sexton is completing plans for a seven story Class C hotel to be erected on Sutter street, west of Powell for W. B. Grosh at an estimated cost of $60,000.

Architect Albert Farr has let contracts for a seven story steel frame store and hotel building to be erected on Ellis street, west of Mason, for A. W. Maltby of Concord. The total cost of this building will be in the neighborhood of $70,000. Mr. Farr also has a number of attractive residences to be built in San Francisco, Berkeley, Oakland and Sacramento.

Architects O'Brien and Werner have an apartment house and hotel in prospect, besides the $200,000 Labor Temple for which plans have been finished and bids taken.

Architects Ward & Blohme report that they have prospective work on the boards totaling over a million and a half dollars.

Architects Welsh and Carey have two handsome apartment houses for Sewell Dolliver, work upon which will probably be started early in the spring. They also have three good size buildings under way in San Francisco and a reinforced concrete convent building in Livermore.

Architect Smith O'Brien has under construction a handsome residence for Attorney Keyes and plans are on the boards for an apartment house.

Architects Havens and Toepke have completed plans for a ten story Class A store and office building for Isaac Liebes at the corner of Sutter and Market streets and this firm has also recently let contracts for a four story Class C lodging house on Fourth street for Mrs. Gay, and a frame residence for Frank Aurys. It is understood this firm will make plans this year for a splendid hotel to be erected by the Doe Estate on the site of the old St. Nicholas hotel on Market street.

Architect William H. Weeks has two buildings under construction in San Francisco and a number of country prospects, including a $40,000 Methodist church for Palo Alto, a $70,000 store and office building for the Porter Estate in Woodland, a $30,000 bank building for the Yolo County Bank at Woodland, a theater and several schools.

Architect L. B. Dutton will complete plans during the year for a fourteen story Class A commercial building or hotel to be erected on the site of the old Occidental on Montgomery street. Mr. Dutton is now busy on plans for an addition to the First National Bank in Oakland and an addition which the Harbor Commissioners have authorized to the Ferry Building.

Architect G. A. Applegarth has plans under way for a fourteen story Class A hotel for the Clift Estate and which will probably cost close to one half million dollars. The same architect will make plans for an additional story to the Spreckels building on California street.

The Charles C. Moore Company will erect a five story fireproof building on the site of the firm's present temporary building at First and Mission streets. This will probably cost $100,000 or more.

Work will be started shortly on the Sub-Treasury Building on Sansome street at a cost of $500,000 or more. Bids for the erection of this building were taken in December.

Architect Albert Schroepfer has designed a six story steel frame Class C hotel for L. Mensor to cost about $50,000, and Architect E. G. Bolles has com-

pleted plans and let a contract for a five story Class C hotel for Dr. Buckley and a three story building on Larkin street for Edward Lurrstedy.

Architects Miller & Colmesnil write: The following is a list of new work that we have for the coming new year.

1. Four story apartment house and stores $155,000
2. Lodging house, Eddy street..... 75,000
3. Apartment house on Jones street 70,000
4. Remodeling office building, Pine street 100,000
5. Residence, Western Addition 15,000
6. Sketches out for large apartment house, Ellis street..... 240,000
7. Alterations to Market street office building 14,000

The buildings to be erected by the city of San Francisco include the City Hall, Bakewell and Brown, architects; Municipal Auditorium, Messrs. Howard, Meyer and Reed, architects; Opera House, Willis Polk & Co., architects, and the Carnegie Library, for which latter there is $750,000 available. The City and County Hospital will be completed at an expenditure of several hundred thousand dollars and there will be a number of school and fire houses built.

Architects Cunningham & Politeo have over $500,000 worth of work in hand, including a substantial addition to the Stewart Hotel, a four story hotel for Thos. W. Butcher at Jackson and Drumm streets, and a reinforced concrete garage.

Architect Henry C. Smith has several fine apartment houses under way, including a three story frame, plaster and brick veneer structure for Mrs. A. L. Brownlee on the east side of Jones street, south of Washington. The estimated cost is $30,000. Mr. Smith is architect of the new Hayward school under way, and a $60,000 school building at Galt.

Architects Fabre & Bearwald have plans about finished for a one story steel and brick garage to be erected at Broderick and Grove streets at a cost of $20,000. The same firm have plans for a three story frame apartment house for J. Pon to cost $35,000 and which will be erected at Howard and Fourteenth streets.

O'Brien Bros., Inc., expect to do three-quarters of a million dollars worth of work this year, including a splendid hotel of 175 rooms and costing $200,000; also a warehouse on Sacramento street for the Union Pacific Salt Company, a store building on California street, and a number of flats and rooming houses.

Architect William A. Newman has several attractive apartment houses under way and he has just let a contract for a $10,000 frame and plaster apartment house to be erected on Greenwich street, near Laguna, for A. Spandan.

From Architect Kenneth Macdonald, the following optimistic note was received:

Answering your letter of December 22nd, I believe that during the next few years there will be a great activity in the erection of buildings in San Francisco.

It seems that the demand for places to live and places to work has been met. The accumulation, however, of capital by different organizations and investment companies, will, in all probability, begin to show itself in the production of larger and better buildings—hōtels, which will depend upon their magnificence for patronage; office buildings and other structures, which will be put up for substantial returns and which will be built of such materials as will attract attention.

Let me take this opportunity to congratulate you on the success of your magazine. I feel certain that as the city grows that its efforts will be more and more appreciated.

A Typical San Jose Bungalow

State Architectural Commission Proposed

One of the matters that will come before the present Legislature in session at Sacramento will be a bill creating a State Commission on Architecture. Edgar A. Mathews is chairman of the Legislative Committee of San Francisco Chapter, A. I. A., which has the matter in hand. At the December meeting of the Chapter Mr. Mathews made a verbal report stating that as Chairman of this committee, he had been in communication with the State Controller on some of the measures which the committee was desirous to have before the Legislature as Mr. Nye, the State Controller, was interested in the proposed legislation. The committee had received an invitation from the Southern California Chapter to attend a meeting on the Tuesday night previous, and Mr. Mathews accompanied by Mr. Mooser, attended the meeting. The meeting at Los Angeles had a large representation of the Legislators of Southern California and an intelligent discussion was had of the Tenement House Law and the law proposing an architectural commission for the State of California. Mr. Mathews stated that much was being accomplished by the Southern California Chapter through the united action of the Chapter members and the influence of the Chapter in obtaining the co-operation of other organizations. He also read extracts from an act suggested by the Pacific Association of Engineers to be introduced at the present meeting of the Legislature providing for the appointment of expert witnesses by the Court and suggested that this Act be endorsed by the Chapter. The Act provides for the appointment and compensation of expert witnesses and would apply to engineers, architects, physicians, etc.

Concrete Cottages in California

"CONCRETE will come into its own for residence construction," said an observant man whose wide travel had given him opportunity to study the architecture of many lands, "when American architects learn the wisdom of getting back to the straight line." It is now apparent that American architects are beginning to do that thing, and the pioneer work is coming from the Pacific Coast. The illustrations accompanying this article show a block of cottages in Sierra Madre, California, designed by Irving J. Gill of San Diego. These concrete cottages are built there for workmen with small families. The California setting is picturesque with its background of mountains and sloping hills.

Describing Mr. Gill's concrete cottage block in Sierra Madre, The Craftsman says:

"When modern man finds that he has become so entangled in the whirl of life that his sense of beauty and proportion is becoming confused and complex, that his inspiration is uncertain and his expression halting, then if greatness is in him he returns to the remedial strength of the primitive. This is especially true in regard to modern American architecture, for our architects have become confused by the inordinate demands of their patrons for something original, striking, distinctive, and are madly rushing hither and thither over the face of the world, hunting for fresh inspiration, plagiarizing openly, seeking in pitiable ways to disguise poverty of idea by over-ornamentation. In their craze to build something original they have been known to construct an entire house of cobblestones (a perfect imitation of peanut brittle) in Colonial lines, with a Moorish red tile roof and an Italian garden in front entered through a Japanese gateway!

"In the West, where man not only dares to be honest but is encouraged in every way to express himself, there has arisen a simpler and more distinctive architecture. One architect of the Coast, Irving J. Gill of San Diego, Cal., after wandering for years among the inspired work of the past—Grecian, Roman, Italian, early English—groping hopefully through the maze that every architect is forced by custom and education to thread, dissatisfied with the best that he could produce and convinced of the absurdity and dishonesty of plagiarism, has had the courage to throw aside every accepted belief of the present day and start afresh with the simplest forms, the straight line, the arch, the cube and the circle. And he uses these without ornamentation, save for the natural grace of a clinging vine that is allowed to trail about a doorway or droop over the severe line of the roof. Instead of delving into the past works of great men, trying to adapt what has been to the conditions of the present, he bends his efforts to determine what should be, regardless of precedent. By this return to fundamental needs, he has hit upon an architecture so simple and beautiful that restless tourists, practical business men, workmen, architects and artists turn aside from their work or play on the highway, just for the pleasure of seeing so satisfying a thing as a house of his designing.

"When Mr. Gill began his work he started with a mere cube as a basis, put a slight overhang to his roofs, let the beams appear in the ceiling and projected the fireplace into the room. But growing more courageous as he saw that the less he departed from the pure cube the more beautiful

Views of the Model Concrete Town of Sierra Madre.

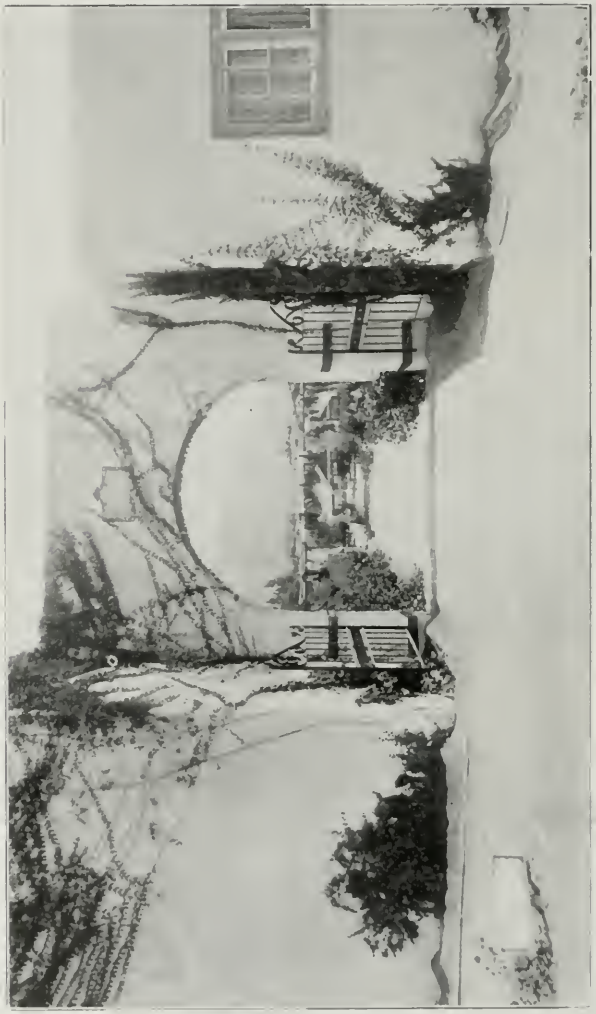
Note Harmony in the Skyline.

Irving J. Gill, Architect San Diego California

Western Views of Inner Courts, Showing Garden and Pergola Effects.

Town of Sierra Madre.

Irving J. Gill, Architect
San Diego, California



Courtesy of Concrete Age

Entrance Gates to Model Concrete City, Sierra Madre, California
Irving J. Gill, San Diego, Architect

his work became, he finally eliminated even these simple structural ornaments and built his walls flush with the roof, with baseboards, casings and wainscots flush with the walls.

"The accompanying illustrations show the entrance gates and several views of some model cottages recently built by Mr. Gill for Mr. F. B. Lewis, at Sierra Madre, California, which furnish a lesson in practicability, originality and beauty. They are little more than cubes set, not above one another as must unfortunately be done in a city, but side by side along the line of a town square, so that their external walls form a continuous line on the north and west sides of the square, leaving the south and east open to the sun. The whole faces inward on little gardens that merge in one large garden in the middle of the square. Each cottage is entered through a loggia that serves as lounging room by day and a sleeping porch by night These cottages or flats as they are called were designed for the convenience and comfort of workingmen with small families, and are built with enviable substantial and sanitary features. They are made with solid concrete foundations, side walls and roofs of hollow block, the roofs reinforced with steel and covered with asbestos. The finish inside and out is cement plaster to which a moisture-proof preparation has been applied to insure perfect dryness during the rainy season. From the entrance loggia a small hall fitted with a coat closet leads to the living and dining room and to the bedroom and bathroom.

"One feature which distinguishes these cottages and all the houses of Mr. Gill's designing is that the walls are finished flush with the casings, and the line between wall and floor is slightly rounded so that it forms one continuous piece. There is no place in such a house for dust or dirt to lodge, or draught to enter, or mice or vermin of any kind to exist, the fireplaces with raised concrete hearth are indented, and the built-in window-seats are of cement covered with removable leather cushions.

"These houses are the acme of sanitary building and are practically indestructible, resisting the ravages of time, fire and storm. Every modern convenience has been placed so cleverly that not an inch of space has been wasted. The woodwork of the kitchen is perfectly plain, no beveling or panelling to catch dust, and the drainboards are of magnesite, forming one continuous piece with the walls and sink, thus preventing the accumulation of grease and dirt that is so often the breeding place of bad odors and unsanitary conditions generally.

"All the walls are white and smooth, devoid of ornament, and they fairly glow with reflected colors from the gardens. The green of trees, blue of sky, red, yellow, pink and mauve of flowers, are all caught upon walls and ceilings which gleam and glisten with the opalescent beauty of a pearl shell. They change with the hour of the day and the mood of the seasons, so that there is always the fascination of a beauty that is alive and responsive, and these plain white walls become the background for a wonderful fairylike pageant of color. So each day weaves its record in fragile tapestries on the walls left bare to receive them. The marvelous power of white walls to absorb color is one of the chief charms of these houses. . . .

"Each little house has a garden plot of its own leading to a central pergola where all the tenants may meet for general social intercourse. The pergola is constructed of concrete pillars and eucalyptus beams and is thirty-seven feet square. There is a central space for a lounging room, where rustic tables and chairs are invitingly placed, and the outer corners sheltered by vines are fitted with hammocks and swinging couches. Vines that will eventually form a green roof have been planted; but because it is all new yet and vines have not had time to roof it in, palm leaves have

A Picturesque View From the Garden Walk

been woven in and out of the eucalyptus frame which, though serving only a temporary purpose, are as picturesque as useful.

"These cottages prove that any deviation from simplicity results in a loss of dignity, that ornamentation tends to cheapen rather than to enrich, and that art lies in elimination, balance, proportion, in honesty and fearlessness. Ornamentation as seen on most of the houses of today represents fear; the designer dare not leave it off, dare not depart from custom, dare not be simple. The Missions of California are beautiful because their builders could not but be honest.

"They had not the time, tools or skill to cover with ornament or cut up into angles, so their works stand with undisputed dignity and superiority among the ornate, bizarre structures that now companion them. They cannot be overlooked or forgotten because their extreme simplicity holds the eye, resting and gratifying it, making an indelible impression of power and repose.

"The houses that Mr. Gill designs stand so pre-eminently for permanence in their simplicity that they can no more be disregarded than the Missions, and are as surely influencing the architecture of the West. They are so unmistakably suited to that sunny land that they have been selected as models for a whole town. Mr. Gill has been commissioned to build an entire industrial village, the first thing of its kind ever attempted in America. The factories that are to make the tile and pottery, those for cutlery, the administration buildings, workingmen's cottages, schools, streets, parks, children's playgrounds, have all been designed by Mr. Gill and are now being constructed under his supervision so that for practicability, permanence and beauty this village will be without an equal."

Another View from the Garden

Kern County Court House, Bakersfield, California
Frederick H. Meyer, Architect

Entrance, Kern County Court House

Typical Court Room, Kern County Court House, Bakersfield, California
Frederick H. Meyer, Architect

The Completed Kern County Court House

THE accompanying plates show the Kern County courthouse recently finished at Bakersfield, California. Frederick H. Meyer is the architect and Frederick J. Amweg of San Francisco the builder. The structure cost in the neighborhood of $350,000.

The building is Class A, four stories and basement and has reinforced concrete floors and tile partitions. The exterior view shows a clean-cut, carefully studied building of White Manti stone. The central motif is decorated with free standing Corinthian columns, while the end motifs are three-fourths engaged columns, with pilaster treatment for the wings. The parapet over the main pavilion is decorated in bas-relief figures and ornaments with a rich cresting over the top.

The bay of the central pavilion is in metal with an ornamental arch and an iron balcony and balustrading at the bottom. The entrance is highly ornamented with carved stone, bronze doors and cast iron electroliers.

* * *

Now It's a "Bunglahigh"

A seven thousand dollar house is being erected according to ideas of F. W. Paramore, a wealthy Pasadena railroad man and owner of the Atwater tract in Southern California, who calls this creation a "bunglahigh" instead of a bungalow.

The house has projecting balconies all around somewhat similar to the houses built in tropical climates and a good deal like a Spanish blockhouse in construction. The lower floor is built straight up without any porches, while the upper floor has projecting eaves and a porch extending out all around the house.

Program for the Sacramento School Competition

THE following is the program, approved by the San Francisco Chapter Sub-Committee on Competitions, American Institute of Architects, for an architectural competition, open to registered architects of California, for a public school building in the City of Sacramento:

Notice is hereby given that the Board of Education of the City of Sacramento invites architects, legally entitled to practice architecture in the State of California to submit competitive designs for a public school building to be erected in the said city, subject to the terms and conditions herein set forth.

The designs submitted are to be judged by a committee of five, consisting of two members of the Board of Education and three architects, the latter to be selected by ballot by the competitors from a list of seven whose names will be seleced by the Architectural Advisor and forwarded to the competitors after the time for entering the competition has expired. The firm of Willis Polk & Company, of San Francisco, California, has been engaged as the architectural adviser of the Board of Education in the conduct of this competition.

The Board of Education reserves the right, in its discretion, to require changes made in any accepted design before ordering working plans and the preparation of specifications.

The author of the design awarded first place in the competition will be appointed architect of the school building to be constructed. Other prizes will be awarded as follows:

Second place, two hundred and fifty dollars in cash;

Third place, one hundred and fifty dollars in cash;

Fourth place, one hundred dollars in cash;

provided, that in the judgment of the jury of award the merit of the designs submitted justifies such award.

The compensation for full architectural services to be rendered by the architect awarded first prize shall be determined in accordance with paragraph one of the schedule of proper minimum charges adopted by the American Institute of Architects. The Board of Education reserves the right to employ such inspectors, of its own selection, as may be necessary properly to inspect all work under construction and such inspectors may, should the architect so desire, jointly represent the architect and the Board. Additional inspectors, if any, employed by the architect must be paid by the architect. In the event of the employment of the architect being terminated before the authorization of working drawings, he will be paid a fee of one and one-fourth per cent upon the estimated cost of the building for which his design was submitted.

Designs are to be submitted as prepared for the block bounded by U and V and Eleventh and Twelfth Streets. This block is rectangular in shape, facing three hundred and forty feet on Eleventh and Twelfth Streets, and three hundred and twenty feet on U and V Streets, respectively. U Street lies on the north side and Twelfth Street on the east. The streets differ little in present importance, but the business district lies to the north and the residence districts to the north, east and west. Eleventh and Twelfth Streets run approximately north and south with a variation of seventeen and one-half degrees east of the true north. The building may be located at will on the block. It is suggested that competitors study the climatic and temperature conditions of Sacramento in order accurately to meet local conditions as to exposures.

Architects or architectural firms desiring to enter this competition must submit their names to the President of the Board of Education not later than January 31st, 1913, at five o'clock p. m. The list of competitors will be closed

at that time, unless for good cause shown the Board of Education may, prior thereto, postpone the closing of the list. Competitors may, in writing, call for supplementary information. Replies to such inquiries will be sent in duplicate to all competitors. No information, supplementary or otherwise, will be given out subsequent to February 5, 1913.

All drawings, together with the accompanying papers, must be delivered at the office of the President of the Board of Education, Room 301, City Hall, Sacramento, California, on or before March 15, 1913, at six o'clock p. m. Each design must be accompanied by an opaque sealed envelope containing the author's card and address. Neither the drawings nor any papers accompanying them, nor any marks upon the package shall in any manner, directly or indirectly, disclose the identity of the competitor. All drawings and other papers accompanying each design must be securely enclosed in one flat, sealed package plainly marked: "Board of Education, City Hall, Sacramento, California. School Competition."

No competitor shall submit more than one design. Plans received after the hour last named above cannot be considered, and will be held unopened subject to call.

A violation of any of the above conditions by any competitor will exclude his design from the competition.

The proposed building is to be a combined elementary and grammar school for approximately one thousand pupils, half boys and half girls. The building is to contain:

Twenty-three class rooms, each approximately 23′ 0″ x 30′ 0″.

Auditorium seating one thousand, including gallery. This auditorium is to have a stage and ante rooms suiting it to use as a theatre and is to be equipped for moving pictures. It is to be so situated that it can be used for evening entertainments of a general character by the public.

Laboratory Room—approximately 1,000 square feet.

Domestic Science Room—approximately 26′ x 30′.

Domestic Arts Room—approximately 23′ x 30′.

Wood Working Room—approximately 1,500 square feet.

Branch of City Library—approximately 35′ x 60′.

Medical Examination Room with emergency or hospital room next. The rooms are to be respectively the model parlor and the model bedroom for the domestic science department and should, if possible, be located accordingly.

Principal's Private Office and General Office.

Teachers' Retiring Rooms, Toilet and Lunch Room. This lunch room is to be the model dining room for the domestic science department and should be located with reference to it, if practicable.

Kindergarten Room—approximately 23′ x 40′. In addition to locker room, the kindergarten is to have a store room, capable of storing all the contents of the kindergarten. It is to have a separate entrance and a toilet for girls and a toilet and urinal for boys.

Boys' Lunch Room and Girls' Lunch Room which should be located with reference to the domestic science department.

Bicycle Room for Boys.

Bicycle Room for Girls.

Open Air Play Room for Boys upon the roof.

Open Air Play Room for Girls upon the roof.

Shower Baths for Boys.

Shower Baths for Girls.

General Boys' Toilet.

General Girls' Toilet.

Apparatus Room for material from the playground.

The foregoing outline is not intended to include auxiliary and working rooms. It is given to indicate the scope of the building.

The Board of Education has allotted not to exceed $180,000.00 for the contractor's cost of this building, which shall not exceed 1,100,000 cubic feet figured from basement floor to average height of roof. It is desired to make

the structure fireproof, or as nearly fireproof as possible. Economy of cost is one of the elements of importance in this competition, and in awarding the prize consideration will be given to simplicity in design and arrangement of plan.

It is intended that the building shall be two stories in height. The roof is to be utilized, according to the best judgment of the designer, with or without overhead protection. If a basement is provided it is to be at the ground level, except for mechanical plant. Wardrobe accommodations are to be located at each class room; a single toilet is to be placed in each Boy's Coat Room, and the same in each Girls' Coat Room. All rooms are to be constructed for conversion into open air rooms, as far as is practicable.

Seven drawings will be required as follows:

Floor plan of each floor and of roof—four.
Front elevation.
Rear elevation.
One transverse section.

No other drawings will be considered.

Drawings are to be in Indian ink on cold pressed Whatman paper 25-inch by 28-inch, with a single band line for border. Scale is to be 1-16-inch to 1 foot. Cut portions of walls are to be blacked in. No floors or ceilings are to be shown. Elevations are to be in an Indian ink wash with shadows at 45 degrees. No landscape accessories to be shown, but a single human figure six feet high may be shown to indicate scale. Plans are to be lettered in plain Roman letters with names of rooms and room sizes. Each sheet is to be entitled in plain Roman letters—"SACRAMENTO SCHOOL COMPETITION," together with the appropriate specific title.

Each design may be accompanied by a brief typewritten description consisting of a memorandum specification and such other information as the author may find desirable in elucidating his drawings.

For further information, address: Willis Polk & Company, care of Board of Education, City Hall, Sacramento, Calif.

* * *

A Notable Reinforced Concrete Statue

Perhaps the most unusual piece of sculpture in this country is the huge concrete statue of an American Indian which was dedicated last year near Oregon, Ill. It stands on Eagle's Nest Bluff, 250 feet above the Rock River and the figure itself is over 43 feet in height. It rests on a 14-foot concrete pedestal, almost half of which is exposed, so that the figure with its visible base measures almost 50 feet. In locating the site a 24-foot silhouette was built, which was found to be too small from the point of view desired. Then a light 42-foot structure was erected on a farm wagon and the wagon was drawn around until the proper location was established.

The statue contains about two tons of twisted steel reinforcing rods and approximately 238 cubic yards of concrete. The surface is mixed with pink granite screenings, giving it the appearance of a granite statue. Approximately 65,000 gallons of water was pumped up from the river for maintaining two steam engines and for mixing the cement. Four hundred and twelve barrels of Portland cement were used and the mixture was as follows: For the base, 1 and 5; for the pedestal and steps going down into the statue, 1 and 4; for the figure, 1 and 3, and granite screenings, 1 to 1½ mixed with a waterproofing compound.

First Presbyterian Church, San Fran[illegible]
W. C. Hayes, Architect

The Destiny of San Francisco is in the Making

By WILLIAM SPROULE,
President Southern Pacific Company.

The destiny of San Francisco is in the making. A city depends upon the country whose necessities it serves, but to San Francisco has been given more. To the millions of bountiful acres served by the rivers and railways leading to San Francisco are added the sunshine and sparkle and stimulant throughout the year of as bracing an air in San Francisco as humanity ever breathed. All combine to give assurance that it is the destiny of San Francisco to be filled to overflowing around her spacious bay with homes of happiness garnered from all the civilizations of the world. To that end let us strive together.

* * *

Nearing the Roof

"I started to work on my twentieth story yesterday," said a busy looking man, "and I tell you I'm making it pay."

"You are an author?" suggests his neighbor.

"Certainly not! I'm an architect."

Solving Los Angeles' Greatest Waterproofing Problem

IN constructing the new Times building in Los Angeles, the architects were called upon to solve one of the most difficult waterproofing problems that has ever confronted the profession. The location of this building is the corner of First and Broadway, at the foot of what is known as the Broadway or Courthouse Hill. All the buildings constructed on this hill, including the Los Angeles County Courthouse, Hall of Records, Times building, etc., have at one time or another been confronted with an extremely difficult waterproofing problem, caused by a very live, underground spring of water which has always existed in this hill.

Before the old Times building was dynamited by the McNamara brothers and associates, the old basement was constantly being flooded by water leaking through the brick and concrete walls and basement floor. It seems that they had a sump hole and pump which worked several hours every day pumping out this water summer and winter. Of course in the winter time the additional drain water from the rain added a further pressure to the regular underground spring pressure.

To create an extra sub-basement in the new building of the Times it was necessary to go down over twice as far as the old basement floor level for the new sub-basement floor level.

On the north rear, and east and west sides of the basement there now exists concrete walls of 30 ft. to 40 ft. in height; against this wall there exists a top strata of soil about 10 or 12 feet deep, a gravel strata below that of 12 or 15 feet in thickness, and blue clay of impermeable consistency below the gravel strata.

The middle strata of gravel is always heavily saturated with the water from the underground springs. When this gravel strata is stopped by the basement walls of the Times building, the water pressure therefrom saturates the soils above and below the gravel to such an extent that a thin sheet of water forms between soils and the outer face of the walls to their full height. The saturated soil, pressing against this thin sheet of water, which in turn presses against the concrete wall, causes a direct hydrostatic pressure for the full depth or height of the wall. The water even goes so far as to force its way down below the walls and under the floor of the sub-basement. This was shown by the fact that water kept coming constantly through the floor of the excavation before the foundation walls and basement floor were completed.

Ceresit, one of the most widely known paste waterproofing compounds, was used through the foundation, basement walls and sub-basement floor of this building. The proportion used was ½ lb. of Ceresit per cu. ft. of concrete in the sub-basement floor and in the lower half of the basement walls. In the upper half of the basement walls ⅜ lb. of Ceresit per cu. ft or about 11 lbs. per cu. yd., was used in the entire concrete mass.

Ceresit was dissolved in the water which went into the concrete mixer, and as the water carried the compound automatically to all parts of the concrete aggregate, a thorough and scientifically accurate placing of the waterproofing occurred through the entire concrete mass.

Very thorough test reports by Robt. W. Hunt, testing engineer of Chicago and local testing engineers, showed that absolutely no action occurred against the tensile or compressive strength of the concrete. The walls and floors inside of the building indicate in a very practical way that the basement is as dry as a bone, except at one point where a concrete construction with very coarse rock pockets against plumbing pipes running through the walls

has allowed water to come in along pipes and faulty construction in concrete. At all other points where the water pressure is just as severe as at this point the inner surfaces of the walls and floors indicate no moisture whatever.

Experts declare this to have been the most severe waterproofing problem that ever existed in Los Angeles. The altogether satisfactory handling of it has proved especially interesting to those architects and engineers who were conversant with the conditions described.

* * *

Improvements in the National Parks of California

THE Department of the Interior proposes to spend $268,403 in the national parks of California during the fiscal year ending June 30, 1914, if the amount requested by the Secretary of the Interior is appropriated by Congress. This is an increase of $170,903 over the appropriation for the current fiscal year. The increases requested are as follows: Yosemite National Park, from $80,000 to $233,703; Sequoia National Park, from $15,550 to $20,900; General Grant National Park, from $2000 to $4800. The principal items for each park are as follows:

Yosemite National Park: Improvement of Big Oak Flat Road from Gentry's to the floor of the valley in order to make it safe for automobiles; improving and widening road from Camp Ahwanee to Yosemite Village; concrete bridge over Merced River near El Capitan; extension of road-sprinkling system from Yosemite Village to Happy Isles and Camp Lost Arrow; improvement of power plant; extension and improvement of water-supply system; improvement of trails to Yosemite Falls, Eagle Peak, Glacier Point, Nevada Falls, Tittill Valley, and Lake Vernon; construction of new trail from Yosemite Point via White Wolf, Harden Lake, and Smith Meadows, to junction with Hetch Hetchy trail on Poopenau Meadows; sprinkling El Portal-Yosemite road and general improvement and maintenance of roads, trails, and bridges.

Sequoia National Park: Widening Grant Forest road; experimental oiling of three miles of road; extension of telephone lines, stairway on Moro Rock; general repairs and administration.

General Grant National Park: Three-fourths of a mile of new road in order to give separate route for automobiles; water-supply system for tourist camp; fencing camp grounds.

For the development and care of the national parks the Secretary of the Interior has asked Congress to appropriate the sum of $733,014, an increase of $505,464 over the appropriations for the current fiscal year. The national parks constitute ideal recreation grounds for thousands of people, but their development and use are seriously retarded by the lack of adequate roads and trails, and until sufficient money is appropriated for beginning a comprehensive plan of development the parks will fall far short of rendering the important public use for which they are intended. It is the intention of the Department to make the principal places of interest in the parks more accessible, to render traveling more comfortable by sprinkling the roads throughout the dry season, and to guard the health of the traveler by the installation of proper water supply and sewerage systems. The responsibility for the future conduct of the national parks must rest with Congress, but the Department feels that the financial needs of these reservations should be clearly presented to Congress in the annual estimates. A comprehensive list of books and magazine articles on the national parks has recently been issued by the Department of the Interior and may be obtained on application.

Warehouse for California & Hawaiian Sugar Refining Company, Crockett, California
Photo by A. J. Brunner *William H. Crim, Jr., Architect*

A Concrete Warehouse with Pleasing Architectural Lines

AN attractive warehouse has just been constructed by the California and Hawaiian Sugar Refining Company, on its property at Crockett, California. It presents a very unique construction, being built over the waters of Carquinez Straits. The foundations consist of 2772 wooden piles, driven by steamhammers to absolute resistance in clusters of twelve each. The piles were then cut off at the mud-line and tied together with heavy timbers, on which the forms for the concrete superstructure rested.

The water in the Carquinez Straits being fresh part of the year and brackish for the balance of the time, no difficulty has ever been experienced with the teredo, or other marine borers.

Wooden forms were built around and over these pile clusters up to the floor level, 9 ft. above the pile cut-off. The piers resting on the piling are 8 x 10 ft., tapering slightly upward and rounding into arches running both ways in the length and breadth of the building, forming what is known as the groined arch effect, the concrete at the thinnest part of the arch being 9 inches. This consruction was used to insure absolute stability, and further, to eliminate the necessity of any reinforcing steel in the structure, thus obviating as much as possible any future damage due to rust or electrolysis. It is a form of construction met with but seldom in these days, but as the building is designed to carry a floor load of 1500 pounds per square foot great strength was necessary, for in case of a collapse of the building, the sugar contents would be precipitated into the waters of the bay.

The warehouse is designed to carry 30,000 tons of raw sugar, which, at a conservative estimate, is worth two and a half million dollars; therefore, no chances have been taken in the construction of these foundations. The cutting off of the piles and the pouring of the concrete all had to be done at low tide, involving considerable additional expense.

The superstructure is of heavy steel construction, the outside columns and beams being buried in an 8-inch concrete wall, with heavy pilasters around the columns every 16 ft.

The roof construction is up to date, being a 3-inch slab of concrete laid on a ferr-inclave base; the slab of concrete then being covered with a 4-ply tar and gravel roofing.

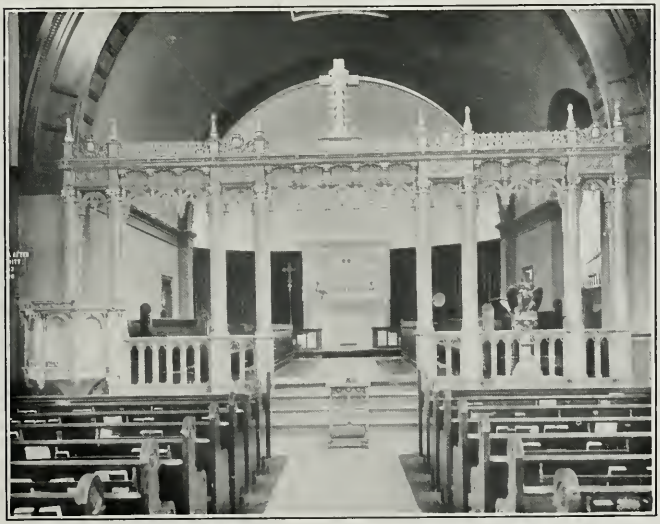
The building is as fireproof as human ingenuity can make it, all windows and doors being protected by automatic closing fire shutters. All the flashings, leaders, gutters and metal work are of copper, and not a particle of woodwork has been left in the finished structure.

The California and Hawaiian Sugar Refining Company believes in beauty as an asset, and has not hesitated to spend a considerable amount of money to make the outside of the building architecturally attractive.

The estimated cost of the building complete is $170,000. William H. Crim, Jr., is the architect.

Design for $170,000 Reinforced Concrete Town Hall
Albert Farr, Architect

Sketch for a Residence, Claremont, California
Albert Farr, Architect



Interior, Showing Altar of St. Marks Church, Berkeley
Photo by Gabriel Moulin *Willis Polk & Company, Architects*

Value of Washed Sand and Gravel in Concrete

TO safeguard against the failure of structural concrete it is today considered most essential that the cement shall be tested and that it prove itself a good cement according to a well-defined set of requirements. A cement that fails to meet these requirements is summarily rejected. Likewise the proportions of crushed rock, gravel and sand are definitely specified, and fairly rigid rules are laid down as to how the aggregate shall be mixed—with a general object in view of seeing to it that the whole shall be fully filled.

But there have been many cases where, when a concrete aggregate fails to behave properly in point of setting or developing the required strength, it is found that the failure is due not to poor cement nor to poor workmanship, but to the poor quality of the rock or sand employed. Engineers generally seek to get around this probable point of failure by specifying that there shall be used only "clean, sharp screened sand," and "clean screened coarse gravel, free from loam or other foreign matter."

Yet specifications rarely go beyond this too general and too easily evaded requirement as to the quality of the sand and gravel. This is probably due to the fact that it is pretty difficult to determine the cleanness of the sand and gravel and its freedom from "loam or other foreign matter."

An interesting and highly instructive series of tests of concrete made from washed and unwashed sand has recently been completed by Smith, Emery & Co. These tests prove conclusively that the ordinary sand and gravel used in concrete structures in Los Angeles will, after being washed, produce a concrete aggregate of so much greater strength that there is no room for comparison in point of quality.

These tests show that by using a mixture of 1:3:5 of the washed material, or a proportion of 1 part of cement to 8 parts sand and gravel, a greater crushing strength was developed in twenty-eight days than by using 1:2:3 mixture, or a proportion of 1 of cement to 5 of unwashed sand and gravel. This saving in the amount of cement more than offsets the added cost of washing the sand and gravel—in fact, it is estimated that while securing a greater crushing strength with nearly half the amount of cement, a saving of from 15 cents to 25 cents a cubic yard would be made.

The following are the reports of compression tests conducted in Smith, Emery & Co.'s laboratories, the prisms being 6x6x9 inches, area 36 sq. ft., the prisms being stored in moist air at 70 degrees F. All specimens were made from one sack. The unwashed sand and gravel was taken from a building under construction in Los Angeles.

Crushing Strength—Pounds Per Sq. In.

Mixture: L. A. City Specifications.	7 days.	28 days.
1 part cement	602	1180
2 parts unwashed sand	639	1105
3 parts screened crushed rock	555	1302
Average	599	1195
Mixture:		
1 part cement	602	1444
3 parts washed sand (14 mesh and finer)	555	1480
5 parts washed gravel ($1\frac{1}{2}$-in. to $1\frac{1}{2}$-in. mesh)	539	1397
Average	565	1440
Mixture:		
1 part cement	1076	1922
3 parts washed sand (8 mesh and finer)	1084	1916
5 parts washed gravel (8 mesh to $1\frac{1}{2}$-in.)	1126	1913
Average	1093	1917

Tests of tensile strength, as between standard Ottawa sand and 14-40 mesh washed sand were made with briquettes 24 hours in moist air, the remaining time in water, temperature 70 degrees F., showing the following results:

Tensile Tests—Pounds Per Sq. In.

Standard Ottawa Sand		Washed Sand, 14-40 Mesh	
7 days	28 days	7 days	28 days
305	450	250	440
265	425	250	425
295	425	250	435
285	430	250	400
287	432	250	425

These tests are food for thought for discriminating architects, engineers and contractors. The fact that the tests show a great saving in cement with a gain, instead of a loss, in strength where washed sand and gravel are used, may be taken as conclusive proof that where stone or gravel is employed that is coated with dirt of any kind, the cement cannot reach the stone but is allowed to set up against this film of foreign matter, which serves only as a form for the cement. Where washed sand is used the cement coats the clean surface of the material during the dry mixing, and then when wet the cement fills every void and cavity, both in the gravel used and in the spaces between the sand and gravel.

A good illustration of this is cited in the history of a large contract for a concrete building erected in New Brunswick, as described by E. S. Larned, C. E., Boston, in a paper read before a recent convention of the National Association of Cement Users:

"It is gratifying to note the growing appreciation of the important part sand plays in all cement work; in very many instances poor results are directly chargeable to the sand used. No cement will improve properly if mixed with very fine sand and results will vary with the characteristics of the fine material. It must also be kept in mind that an intimate mixture of cement and fine sand is very difficult to attain, and a thorough distribution of cement throughout the sand voids is absolutely essential to good results. Sand that looks good is not always above suspicion; the following instance will serve to show the importance of testing the sand before use. An important hydraulic work was begun last spring at New Brunswick, and the contractors and engineers had congratulated themselves upon having what appeared to be an ideal deposit of sand and gravel for concrete work. The cement was thoroughly tested with standard sand, with good results. When everything was ready an active start was made and considerable concrete was placed before any doubts arose; it would not set up, however, in a week's time (or longer as it proved) and the cement was immediately tested again, with favorable results, and then some of the sand was examined. On the washing test it was noticed that a light opalescence was imparted to the water, remaining in suspension several days, but leaving practically no deposit or sedimentation. The cement was then tested with this sand before and after washing, and the trouble was at once located. The sand and gravel were both washed thereafter, and good results followed."

Many other instances might be cited where concrete structures have failed by the use of dust-covered sand and gravel. The very presence of foreign material in the concrete aggregate, aside from its probable effect on the binding together of the material, offers a chance for weakness that should not be overlooked.

Norman Shaw as an Architectural Critic

THE recent death of the eminent English architect, Norman Shaw, has naturally led to fresh survey of his work, and attention has been called to the regrettably small degree to which his talent was utilized for public buildings. He was 81 when he died November 19, and he attained distinction more than half a century ago; in 1877 he became a member of the Royal Academy. Yet the only considerable public building he designed was the impressive New Scotland Yard on the bank of the Thames. The London Daily Chronicle observes:

> Wealthy men desirous of spending some fraction of a million on a country house knew whom to employ; and Norman Shaw was given the opportunity of designing more notable country houses than probably any English architect before. He designed, too, in the streets of London, many of their most striking buildings; but with the exception quoted they were not public buildings, although an unprecedented number of public buildings were erected in his time. What were the reasons? Partly, perhaps, a certain Philistinism in our public authorities, which makes them less apt to secure the best work than some of our millionaires are; but mainly, we think, the "competition system."

He was often called upon to serve as assessor, or judge as we call it in America, and is said not to have been a particularly good juror. As the Chronicle says, he would have been much better employed in designing the buildings himself, but the competition system is not well adapted to enlisting the services of the best men.

The Chronicle seems to think England specially afflicted in this way, but America is not exempt from the competition mania. It seems to be felt that the way to get something really fine is to set everybody to work and pick out the most promising thing that turns up. There is something to be said for that method as a means of encouraging young and unknown architects, but it ought to be reserved as is done in Germany, for buildings of minor importance, for it is a fairly sure way of achieving mediocrity. An artist never expends creative energy with the same freedom and confidence for a contest as for the actual execution of a task. Prize poems and prize stories are notoriously a bad lot. There is no sure way to get a masterpiece, but the best chance of it lies in finding a man of proved, though not necessarily of celebrated, ability who has a lively interest in that particular kind of work, and then giving him as free a hand as possible. He is far more likely to produce something vigorous and expressive than if his energy has to go to turning out a set of drawings that will probably please a prize committee. A great general once shrewdly observed that councils of war never fight; it might almost be laid down as an axiom that the taste of an art jury is never so good as that of the individuals who compose it. It leans almost inevitably, and the more strongly in proportion to its culture, toward the safe and commonplace. An artist may trust himself to be bold, to go as far as is possible without going too far, but he is not so ready to repose the same confidence in another. As assessor Norman Shaw was content with mediocre respectable designs that showed no trace of the mental energy he was accustomed to put into his own work. Nor can an architect, for that matter, be expected to concentrate his mind as strenuously on a problem which may not be given to him for solution as he does on an actual commission. The competition plan is supposed to insure the best possible design; its actual result is the precise opposite.

Norman Shaw was a man of whom London could have made far better use than it did. He was a man ahead of his time, so far as England is concerned. He did valuable service as an adviser in his later years, but this was after he had retired from active work. It was largely through his influence that some steps were taken to give London more symmetry. "What we want,"

he said, "is stateliness for an imperial building. And we shall never do it without a plan, a big comprehensive plan. Lay out your designs, and builders will build to them. Look ahead and work on a clear scheme, even if it takes 100 years to complete that scheme. Architecture, painting and sculpture are quite isolated here, and if they are not antagonistic that is the most you can say, whereas in France they are bound together, not merely by combined training, but by the personal friendship of those who practice them." Something of what he meant may be seen in the Regent-street Quadrant and the new Piccadilly circus, both of which he himself designed, and which will be highly effective when they are completed.

* * *

Loft Buildings an Attractive Investment

Modern loft buildings have about the same attractions and advantages as have offices, but their owners expect to get a little more income from them. About seven per cent would be a fair average for such properties, though there are many in Manhattan which pay as high as ten or fifteen per cent on the investment. Among the newer uptown lofts there are many which show a seven per cent income on present rentals and there is likelihood of even better return as the new section becomes better established through the growth of New York commercially. Properties paying higher than ten per cent are not easy to buy on this same basis. In most cases their owners will not sell at all and where property can be had it is capitalized on a lower income.

Loft buildings do not express the need of sinking funds as do offices, for it is generally conceded that in most cases the land they occupy has not reached its highest value. The most modern buildings will continue to be more modern for twenty years or more and in that time the land will probably have taken on sufficient added value to offset all depreciation.—Building Management.

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Vitrified Clay vs. Concrete Sewer Pipe

California manufacturers of vitrified clay sewer pipe naturally feel very much elated over the final outcome of the cement pipe contract in San Diego, as that city has purchased about fifteen miles of vitrified clay pipe since the completion of the cement pipe contract. This is a vindication of the stand taken by Engineer Capps, who has always maintained that "a vitrified salt glazed sewer pipe burned to the point of vitrifaction, has been proved, beyond all question, to be proof against any destroying agent whatever, except fire, and is used in all conservative practice of able sanitary engineers throughout the Unted States."

* * *

Public Buildings for California

The Congressional subcommittee of the House Committee on Public Buildings has announced that a favorable report will be made for the following appropriations for government buildings to be erected in California: $700,000 for the construction of a new marine hospital at San Francisco; $100,000 for a postoffice building at Modesto, and $125,000 for a postoffice building at Bakersfield. It is possible, however, that the appropriation for the marine hospital may be cut down, as the Treasury architect figures that $500,000 will be sufficient for the work. For a postoffice structure at Willows $75,000 is required, while $40,000 was asked for a postoffice and Federal building at San Pedro.

The Skyscraper of To-Morrow

By THEODORE STARRETT*

AN interview on the subject of our coming skyscrapers which I recently gave to the New York Sun and which attracted the notice of various architectural publications, is the occasion of my further appearance in the guise of a prophet. The Sun story was a half humorous altogether serious discussion of the defects of New York skyscrapers—and they are as a rule an unhappy lot of buildings—and a statement or prophecy as to what New York and other big cities would eventually come to.

I have no patience with criticisms of our American skyscrapers by foreigners or by unpatriotic Americans who love to echo the contemptuous remarks that have been made by these uncomprehending strangers who come from countries where they have not the enterprise to build these great business buildings. Their kings built beautiful palaces and their priests in by-gone days built beautiful churches, but of the modern skyscraper, the distinctive American phenomenon, they are incapable of judging. Our skyscrapers have their faults, due largely to foreign influence, and to the erroneous belief that the external form was the all important consideration. We are working out of this period of misinformation and the economic consideration is coming more and more into its own. It is interesting right now to consider what will be the skyscraper of to-morrow.

Michael Angelo preached the gospel that nothing is beautiful unless it is true; and truth is only another name for efficiency. That is the sort of beauty that the tall building of the future will have; it will possess the beauty of supreme utility, and in this the New York skyscraper has lamentably failed. It will not be built for an advertisement. It will be built for revenue—this skyscraper of the future. It will be constructed not to create some architectural splurge, but upon the idea of an ocean liner, to carry a maximum cargo at a minimum of expense. In this it will conform to Michael Angelo's thought.

It will be constructed, therefore, as he constructed a marble man, with a thorough understanding of its inner parts before his outer parts are arrived at. The architect of the building of the future will not be designing architectural ornaments primarily; he will be designing a tremendous engine of working parts. He will first think of the bone of his building and will build the viscera into it and the flesh upon it.

As to limitation of height it may be said there isn't any limit, provided there isn't any limitation to the ground space on which one builds. The only point is that a building should possess the proportion of utility, and that proportion ought to be dictated absolutely by the amount of ground space a building occupies. But however large it is, there won't be any minarets, and towers are only energy wasted; they are the sacrifices of

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utility to so-called beauty. The hundred-story office building is an actual possibility, but it won't be a skyscraper in our meaning of the term; it won't be a gaunt, narrow-chested, thin-waisted creation. It will be a giant being with a giant proportion of ground beneath it.

There is no reason why the giant building of future years may not be beautiful, even though it does its work well. It will be like a great ocean-going steamer, which is beautiful in an abstract way, although efficient, and to the understanding eye is far more picturesque than any old sailing vessel that ever sailed the seas. Ornamentation there will be, but it will be of a nature not to interfere with the form. The unfortunate notion that a building must be covered over with meaningless bumps and excrescences, a notion borrowed from foreigners, will be tabooed. Color will be used to produce the contrasts which the eye delights in.

I don't believe that the sort of building I am speaking about will have any overhanging cornice. One reason of this is that as the building becomes old the cornices crumble and drop off. This has happened occasionally and is likely to happen more and more, for the best type of skyscrapers are all very new. Hardly any of them are over twenty-five years old, and the really big ones, in New York at least, are less than a dozen years of age.

The tall building of the future, too, will, in the cities, have a tendency to uniform height, with roofs equipped with aeronautic platforms; for the development of the airship will exercise a tremendous influence upon all architecture in the next fifty years. There will probably be city regulations governing specific heights; so all buildings within certain areas will reach up, by means of these aeroplane landings, to this prescribed plane. The airship will also largely modify the roofs of great office buildings, upon which at present regular little settlements are built.

This aeroplane notion is coming faster than we think. Three years ago I allowed my imagination to run away with me on the subject of aeroplane stations on the tops of skyscrapers. Within a month the newspapers announced that the Bellevue-Stratford Hotel, in Philadelphia was to have an aeroplane landing on its top. Whether the idea was ever carried out I don't know. When people get to entering the big buildings from the top there will be entrances there, too, as well as from the street. There will be reception halls at the top. Traffic will come at both ends of the building then.

In these upper reception rooms there will be no necessity for heavy pillars, such as characterize reception halls and rooms at the base of a building. The elaboration of roofs, too, will come into the scheme of things from this increased traffic through the air. Summer gardens will bloom. There will be pergolas and trellises. The tall building of the future will be very pleasant from the top.

But viewing the great building in its economic aspect and returning to essentials as opposed to the outward form there is one great improvement in building, one which it has surprised me has not been made long ago. It is such a very obvious thing. It is the cooling of offices by artificial means on the same idea as that by which we now heat them. This will probably be one of the last reforms. You will regulate your cool as you now regulate your heat from your radiator.

The tendency of the great building of the future, too, as judged from its evolution in the past, will be to develop a huge machine of cleanliness. It will be a building hygienically as perfect as that of any hospital today, toward whose conditions the whole trend of modern building development is working. It will be a dustless place. All the corners at walls and floors and ceilings will be rounded. Useless, dust-collecting mouldings will be

omitted and never will be missed. It is probable that the air issuing into it will be filtered and there will be assuredly some arrangement by which all impurities of air generated within it will be sucked out of it as quickly as such impurities are formed. Even now at the New York Municipal Lodging House there is such a mechanism.

Light, too, will be the great aim, as it is indeed, in the most modern of our present office buildings. The office building of to-morrow will be a great light palace whose windows will swing at the touch of buttons.

The most interesting fact, however, in the great buildings that lie before us is that tendencies indicate that they will be cities in themselves. They will, for instance, group themselves about great transportation terminals, or indeed be transportation terminals, as the Hudson Terminal Building has already done, for within them will be all the forces practically that can supply civilized man with all his needs.

There will be a market which is an obvious thing to say, as a market has already arrived in the Hudson Terminal Building. This market will include all the supplies that are deemed necessary to commerce. The presence of banks will become a necessity. They will naturally be arranged on the street level immediately over the market, which may be underground. Then will come the offices for twenty-five or thirty tiers. Above this would naturally be expected the exchange and club concourse and elevator transfer. A couple of stories might be given over to this sort of business.

And then there arrives the consideration of private apartments. Private apartments in an office building? Unlikely? Out at Uniontown, Pa., there was, and may be still, for all I know, a man who made a fortune in coal—several millions. He didn't pull up stakes and move to Pittsburgh and thence to New York to spend his money. He liked the old town too well. So he built a ten-story skyscraper. He got D. H. Burnham, the great skyscraper architect, to do it, and it is the weirdest looking little thing you ever saw in your life.

It sticks up as high as the mountains that surround the town, and although when I saw it about four or five years ago, there were no other skyscrapers in the town and no prospect of them, the architect had planned it with light courts, etc., with a front of fancy brick and back walls of common brick, for all the world as though he were building a skyscraper in New York. Now here is the point about this building:

The lower stories are used for office; the street floor, I think, has a bank that the millionaire is interested in, and five or six of the upper stories are fitted up as apartments that are occupied as residences by the elite of the town. Mrs. Astor does not live on Fifth avenue, but on the top floor of the village skyscraper. She has a view, and I presume a breeze, just as she will have in an upper floor of the future office building of New York City. These things are the envy of her less fortunate neighbors—all of which goes to show that New York, Chicago, San Francisco and other large cities are actually behind the times.

For the future office building, of course, a roof garden would be essential. A country club in the city, too, is not a surprising thing when you view it in relation to the tall building of the future. There would certainly be tennis, a gymnasium and a swimming pool; though most of these things have been done already.

So the office building of the future is not so wonderful as it seems. For it will only, after all, represent a collection of human facilities which have individually, almost all, been included in one building or another at present in America. And even the aeroplane platform at the top is not such a long way off.

An Experience in School Building Competitions

By WALTER COOK, President American Institute of Architects

WHILE it is generally recognized that the direct selection of an architect for any proposed work on the ground of the proofs that he has given of competence and ability, is the best and safest course for the client to take, it can easily be understood that in public work such a selection is often difficult. The public body which has the very delicate duty of making a choice may be accused of favoritism by any discontented element in the community; and it not infrequently happens that such accusations are not without justification.

A public body which has not a very high sense of duty and a very clear understanding of its functions is sometimes apt to forget that the only thing which its members can properly keep in mind is the best interest of the community. It is likely to consider the designing and supervision of a new building as a sort of prize to be striven for by the architects—as if it were a piece of meat thrown out to be scrambled and fought for by a pack of hungry dogs.

Now this point of view might have a certain reasonable aspect, if we could lose sight of the fact that the ability to produce an attractive design on paper is only one part of the architect's work—only partially related to his ability as the constructor of a building. Only too often this incompetence fails to fulfill the expectations raised by the drawings, either as to beauty or utility. And, the cases in which even the drawings are made not by the architect but for the architect are unfortunately not altogether unknown.

It is for these reasons that an architectural competition open to any architect is an exceedingly dangerous proceeding for the community. Particularly is this true when any man is allowed to compete who has not given proofs of experience and capacity beforehand, so that there can be no question raised as to his employment if he is considered to have submitted the best design. It must be remembered too that while any private owner is justified in taking any and all risks in the choice of an architect, no public body is justified in doing so. A private individual is responsible only to himself, while a public body is in a position of trust and is responsible to the community which it represents.

It is the want of knowledge or of consideration of these conditions that has resulted so often in unfortunate results. And doubtless many of these would have been prevented if the public at large and the bodies representing them were aware of their existence: for more often than not they have been the result of ignorance and not of any improper motives. It is very noticeable that as they are more generally understood, matters are better managed. The "Campaign of Education" is really not a very strenuous one.

A number of years ago the Board of Education of a thriving city in one of the Middle States was confronted with the problem of a new school building. Upon deciding to have a competition for the selection of an architect the members of the board retained the writer as professional adviser. Their first statement was that "public opinion demanded that all should have a chance." When the dangers of this course were pointed out to them and competition between a limited number of architects of proved ability was recommended, they finally, with perhaps some reluctance, agreed to a compromise. The competition was advertised, and the an-

nouncement was made that any architect desiring to compete should submit his name and qualifications to the board. From these names a number, not to exceed fifteen, who seemed to promise the best showing, should be allowed to compete, and no other. The competition proceeded in due course, one of the competitors was appointed and the schoolhouse was built.

Some years afterwards the same board had another schoolhouse to build and again consulted the writer. "We have concluded," they said to him, "that you were right in your advice. For this competition we are only going to invite five or six architects, all of whom we know are good men, and whom we shall pay for their services." The competition was held, and it happened that the winner was the same architect who had built the former school.

Again, some years later, a third school was to be erected. The Board of Education then decided that, even though the results of the former competitions had been successful, a competition in this case was neither necessary nor desirable; and the same architect was again appointed.

It seems as though this little story in three episodes is instructive and valuable, as showing that an enlightened and intelligent public body only needs to know the real conditions to arrive at the same conclusions as those of the great majority of architects. In this particular instance knowledge was gained by experience—an experience which might easily have been a disastrous one. It is sincerely hoped that other Boards of Education, in other cities, may profit by this experience, without incurring the dangers so happily escaped in this case.

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The Finishing of Hardwood Floors

IT is seldom, indeed, nowadays that a house of any pretension to completeness is not furnished with what is termed "hardwood floors," but the great variety of woods now used under this term and the equally varied methods of treatment of these woods furnish material for endless discussion. Shall the floors be of oak or birch, beech or maple, or hard pine?

It is not so very long since oak was the only wood thought of for hardwood floors. People thought it was the only correct thing. But within a few years many new and surprising effects have been developed from other hardwoods or combinations of them, such as maple and the birch and beech woods from Michigan forests.

For dark rich effects oak has no equal. The houses of our English ancestors were of oak, and in some cases even their sacred edifices, and the test of time shows them after a lapse of several hundred years remaining sound, sometimes outlasting the stone and brick with which these structures have been repaired.

Maple is very dense and hard and takes a beautiful polish. Its light cherry coloring is most effective where light color schemes are used and for bedroom floors is par excellence. With but a protective finish applied some maple is almost ivory in tone and is a perfect background for dainty boudoir rugs in soft colorings. An upstairs maple floor is recalled, which was in such perfect condition as to occasion remark, having been finished with floor stain two years before and not since touched except the ordinary dust. Truth compels the further explanation that the finish had three months in which to harden perfectly before a foot trod upon it.

Beech and birch are used considerably, and they not only answer the demand of durability, but are susceptible of a beautiful finish and will receive a variety of color stains. A birch floor really demands a stain, as its natural shading is so varied as to produce an unpleasant striped effect if laid alone, unless more carefully selected and matched up than usually happens. Mahogany stains seem best adapted to it.

Beech takes an excellent walnut stain, and will also receive a green flemish tinge, making it appropriate for use with the almost universal green color schemes now in vogue.

None will deny that the wearing quality is of prime importance, but that need not interfere with bringing out the special beauty possessed by the goods themselves—beauty which lies in the grain, the texture, the surface appearance, the natural shading of the natural woods and the effects produced by color treatment in various ways.

The first thing, of course, is to be sure your flooring is of the best quality of its kind, and too much stress cannot be laid on unhurried finishing. With the end almost in sight it is so hard to wait to get into the new house where it looks all right. But to have a permanent finish to our floors we must have time. The wax or varnish should be put on in thin even coats and allowed to thoroughly harden before a second coat is applied. Two weeks is not too long to allow for the finishing of the floors, though it is often allowed but three or four days. The wax finish for floors gives a rich, even surface, and is not more difficult to maintain than other finishes. Oil is not to be thought of where beauty is a consideration. It darkens the floors, holds the dust to it and has no finished surface.

In varnishing, the foundation is either a "filler" or a "sizing," and the use of one or the other depends on whether the wood is open grain or close grain. Of the more common woods, the open grain are hard pine, oak, ash, chestnut, walnut, butternut, mahogany and rosewood. The close-grain woods are white pine, maple, cherry, cypress, birch, redwood, whitewood and satinwood. If the floor is of open grain wood it should first be treated with a paste wood filler, to fill all the pores and thus leave a smooth surface for the varnish. If the varnish were applied without a filler first having been rubbed into the wood, the varnish would sink into the pores and present a pitted surface. For close grained woods a sizing should be used instead of a filler, and this sizing is made of two parts of turpentine to one part of hard drying varnish.

To wax a floor that has been cleaned and dried, first give it a coat of any of the good prepared "foundation" mixtures. After the first coat of wax has been rubbed smoothly over the floor and has been allowed to dry, the second coat should be applied. The great danger is getting too much wax on the floor, for an excess will result in blackened patches and the accumulation of dust. After the second coat is dry go over it with a weighted brush wrapped in a woolen cloth and rub always with the grain of the wood. This forces the wax down into a natural position, whence it may be dislodged with the greatest difficulty. A floor so treated ought to last a year with proper care. As for the daily cleaning, remember that wax should never be touched with water. Grease spots may be removed with a little turpentine. White marks and dullness, caused by accidental spilling of water on wax, may be eradicated by rubbing the places with a warm woolen cloth. For the rest, the wax floor should be rubbed with a weighted polisher and always with the grain of the wood.—Keith's Magazine.

Reception Corridor, R. N. Burgess Company, Bankers' Investment Building, San Francisco
Frederick H. Meyer, Architect
Hydraulic Floor Tiles Manufactured by Henry Gervais

Some Good Hints About Decorating Modern Bathrooms

DARKNESS in our bathrooms has given way to immaculate whiteness and cleanliness. Here and in our bedrooms the decorator's skill is taxed in less of an ornamental than a practical way. "Usefulness" and "durability" are the sole criterions of effective decoration in these two rooms of our homes.

Modern sanitary plumbing, with its open pipes and absence of any more woodwork than is absolutely necessary, has brought about a revelation in the decoration and artistic treatment of bathrooms. In former days, the bathroom was usually provided with a high wainscot either of oak or walnut finished with more or less elaboration. It might, perhaps, be paneled, or it might be made of simple vertical beaded boards, but at any rate, the woodwork was finished in the natural color, usually with an outside varnish, so that it would stand the action of the steam and water. The tub was as a rule paneled in with woodwork to match the wainscot, and the washstand and watercloset were encased in cabinet work of more or less elaboration. Above the woodwork the walls were either painted in a plain tint, or were, perhaps, decorated or hung with paper.

But modern sanitary science has discovered myriads of germs that lurk in all sorts of places and constantly menace us with deadly diseases

and consequently (to keep up with the process of the day) all this scheme of bathroom decoration had to be changed. The cabinet work disappeared, for our scientists declared that there must be no places which could not be kept absolutely clean, and no nooks in which dust or dirt might find a lodgment. Pipes must no longer be buried behind plaster but must be exposed so that a leak might be instantly detected and immediately corrected. This has brought about a necessity for painting the lead pipes, and what is more difficult, for painting the tarred cast iron pipes. Sometimes these latter are encased in a wooden box that has a hinged door, or are hidden behind a panel in the wall, but this is not considered the best plumbing practice.

In doing away with the cabinet work about the tub and other fixtures, the wainscot has naturally suffered the same fate. The custom has grown up to finish the walls of bathrooms with tiles, or at least to make a dado of tiles, and to paint the wall above, using as little woodwork as possible. But tiles are expensive and people of moderate means are often compelled to forego the luxury of having them. Still they want the effect of tiles upon the wall. To meet this many wall paper manufacturers have put upon the market papers specially designed for bathrooms having tile figures, and being finished with a varnished surface that makes them perfectly waterproof. Probably more of these washable tile papers are of English than of American manufacture. They answer the purpose fairly well but are not so permanent as a painted wall. They are more difficult to hang than ordinary wall paper, and to do a first-class piece of work requires that the wall shall be first covered with white lining paper, in order to make a perfectly smooth job and to keep the joints of the varnished paper from separating after drying. The paste should be made of the best flour with a little alum added to it. It should be of the best quality, made fresh if possible, and should be cool and strained through a fine sieve. The thickness of the paste should be regulated by the weight of the paper, making it as heavy as possible, and hanging each length of paper immediately after pasting. Otherwise, it will be found almost impossible to match the breadths of paper, a thing absolutely necessary in a varnished tile paper.

Probably the most satisfactory painted treatment of bathroom walls is in stenciled tile effects. The entire wall may be given this tile effect, or the tile design may be carried up as a dado to a height of some five feet where it should be capped with the border, and the wall painted in a plain tint above. For these tile designs light colors should be used in imitation of the tiles most generally used in bathrooms. Delft colorings are very popular, either dull blue or dull green on white or ivory white. Blue green on a background of pale cream is very pleasing, or a more pronounced green on a pale pink ground. Very light lemon yellow might be used as a ground color with the design stenciled in a light ochre tint. The color should be mixed so as to dry with a gloss. A good result could be obtained by mixing the color very thick for the last coat and adding a certain proportion of varnish, then stippling it on the wall in such a manner as to give a roughened effect. A coat of outside or flowing coach varnish over this would give the work the mellow tone that many of the art tiles have.

It is remarkable how conspicuously the tiniest bit of dust that may get worked into the varnish will show up when the work is finished, and great care must therefore be taken that dust is not present.—Practical Decorator.

Architectural League of the Pacific Coast

LOCAL COMMITTEE.

President, Loring P. Rixford *Vice-President*, John Bakewell, Jr. *Secretary*, W. Hays

JURY.

Mr. John Bakewell, Jr. Mr. L. Bourgeois Mr. N. Hayes Mr. Warren Perry
Mr. John Bauer Mr. Arthur Brown Mr. John Galen Howard Mr. Loring P. Rixford

Atelier Work of the Beaux Art Society

Eighty finished drawings were received by the local committee for judgment on Nov. 25. These were the first problems of the season and the showing made in the different problems was one that speaks well for the work of the Beaux Art Society.

The following is the list of mentions awarded.

Class A Project—A City Residence.

San Francisco Architectural Club Atelier

Name	Award
*Carl Ingalmar Warneke	Mention.
Stanley C. Flawn	H. C.

University of California Atelier

Gertrude E. Cornfort	Mention.
Arthur Jory	Mention.
*Stafford L. Jory	Mention.

*Went East for higher award.

Class B Project—A Driveway Through a Public Building

San Francisco Architectural Club Atelier

F. Allamand	Mention.
*Ray T. Locke	Mention.
C. M. Norgreve	Mention.
C. T. Strothoff	Mention.
R. Wyckoff	Mention.
L. A. Bryant	Mention.
H. E. Burnett	Mention.
Guy Brown	
A. J. Horstman	H. C.
*C. J. Harrison	Mention.
F. Jones	Mention.
T. J. Kent	Mention.
T. M. Krama	Mention.
H. Michelson	Mention.
J. A. Magee	
M. Morrison	Mention.
P. J. Maloney	Mention.
A. I. Randa	Mention.
L. Starks	Mention.
C. A. Tantan	Mention.
*S. D. Willard	Mention.
H. C. White	Mention.

*To go East for higher award.

University of California Atelier

Margaret Logan	Mention.
E. W. Maybury	
F. V. Mayo	Mention.

Los Angeles Architectural Club Atelier

R. M. Cassidy	
F. P. Rasche	

Portland Architectural Club Atelier

P. Wright	

Archaeology

San Francisco Architectural Club Atelier

*A. Harcos	Mention.
*F. Allamand	Mention.
*L. A. Bryant	Mention.
*M. Morrison	Mention.
*E. Weihe	Mention.

*To go East for higher award.

Portland Architectural Club Atelier

Name	Award
J. Bauman	Mention.

Class B—Order Problem A Porte Cochere

San Francisco Architectural Club Atelier

W. W. Eckley	
W. A. Hansen	
W. Hubbert	Mention.
A. Knudsen	Mention.
C. Reinecker	Mention.
C. R. Schmidt	Mention.
A. C. Whittlesey	Mention.
M. T. Jorgensen	Mention.
A. Bien	Mention.
J. C. Davidson	Mention.
B. J. Gordon	Mention.
D. Garley	Mention.
L. Kruse	Mention.
H. Keyser	Mention.
E. Weihe	Mention.
R. M. Carlyon	Mention.
R. Jenkens	Mention.
A. Mellberg	Mention.
L. Rosebrook	Mention.
R. L. Reinehertz	Mention.
G. W. Reed	Mention.
R. Shaw	Mention.
H. W. Vellalon	Mention.

Warren Perry Atelier

W. A. Grahm	
A. R. Monroe	

Los Angeles Architectural Club Atelier

R. M. Haggin	

Seattle Architectural Club Atelier

D. Clippenger	Mention.
A. Derry	
H. Moldenham	
A. M. Russell	Mention.
J. Sneeringer	Mention.
W. Yates	Mention

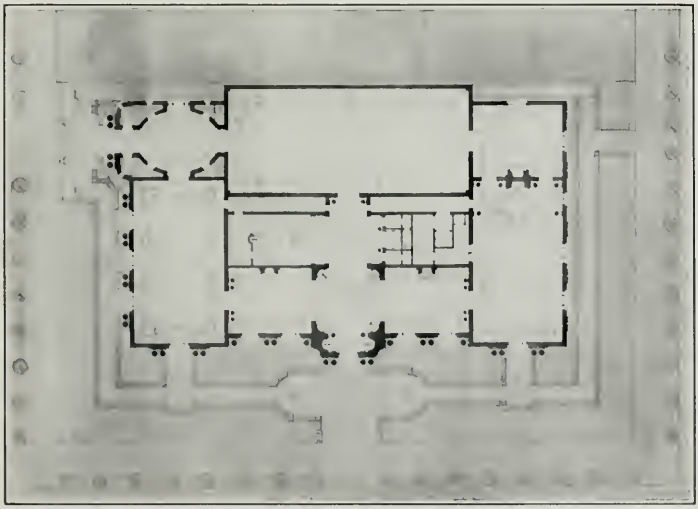
Portland Architectural Club Atelier

L. H. Dittrich	Mention
E. D. Nicholl	
J. Slanton	Mention.

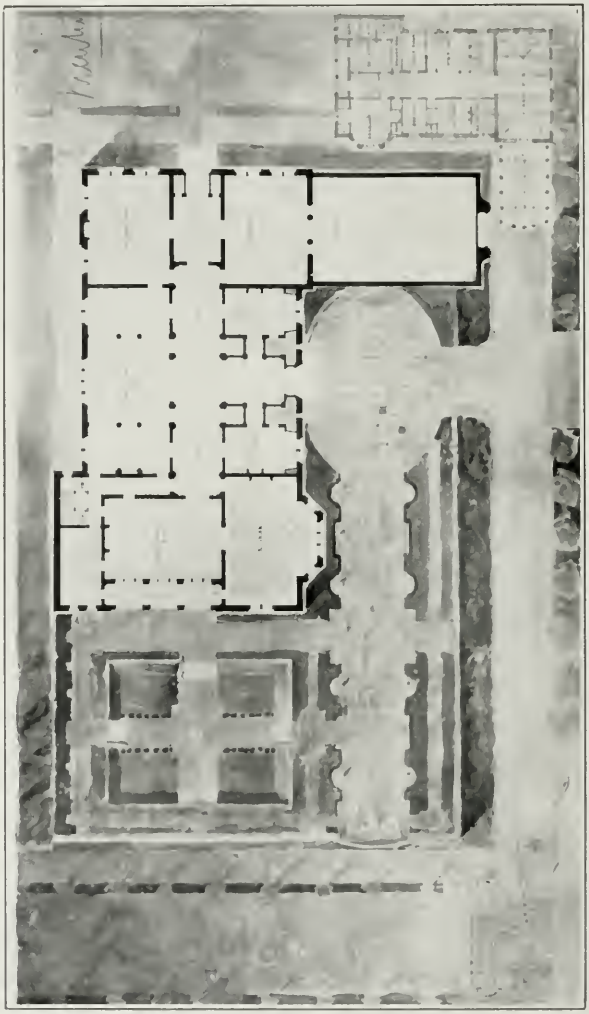
Vancouver Architectural Club Atelier

S. Dresser	Mention.
L. Hatchard	
C. P. Jones	Mention.
W. Downing	Mention.

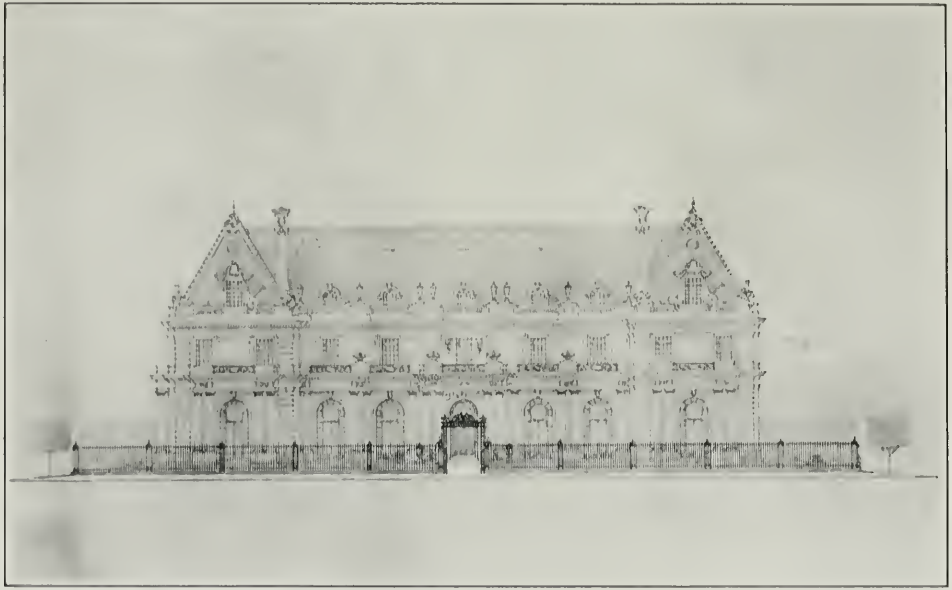
Design for a City Residence
S. L. Jory, Architectural Department, University of California
Awarded Mention



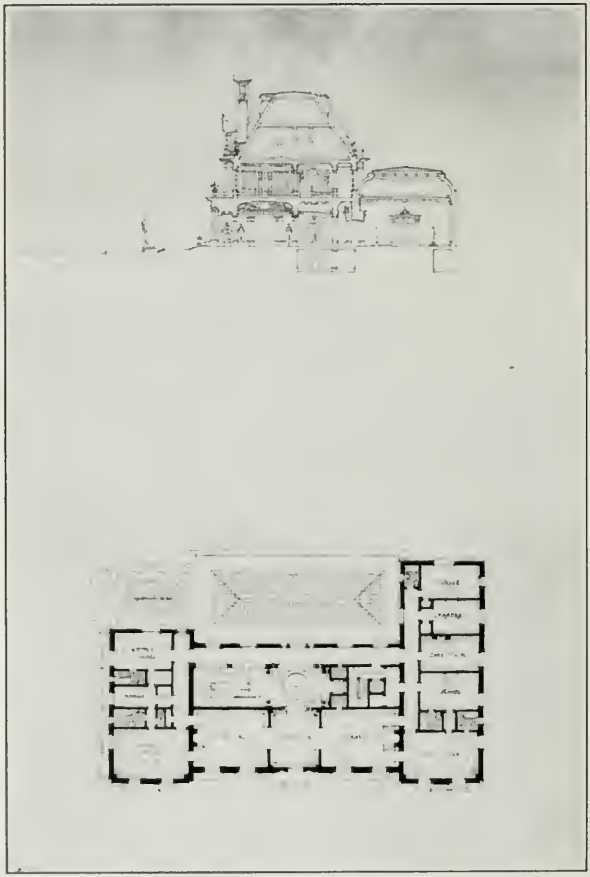
First Floor Plan, A City Residence
Carl I. Warnecke *Awarded Mention*



Plan for City Residence. Awarded a Mention — *S. L. Jory*



A City Residence *Carl L. Warnecke* *Atelier, Brown & Bourgeois*



Section and Floor Plan, a City Residence
Carl L. Warnecke

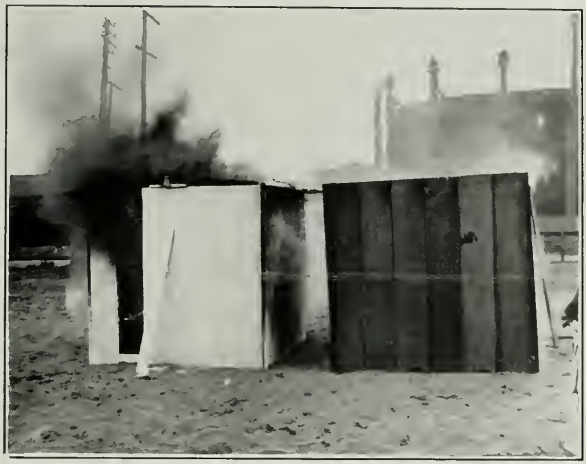


Fig. 1

Underwriters' Problems of the Panama-Pacific Exposition

By O. P. SHELLEY, Assoc. Mem. Am. Soc. C. E.

THE questions which relate to fire protection at the Panama-Pacific Exposition, are in many ways very decidedly different from those which pertain to every day commercial building. In the latter case, the primary question is to reduce the rate of insurance and to this end every possible use is made of those materials which the facilities of the "Underwriters' Laboratories" at Chicago, have tested and approved as being fire retardents or fireproof. In the case of the Exposition, however, the question must be viewed from a different angle, as it is not so much the rate of insurance which can be obtained, as it is obtaining any reasonable amount of insurance.

It is conservatively estimated that the value of the buildings and exhibits within the Exposition grounds will not be less than $300,000,000, and despite the large area of the Exposition grounds, the buildings must of necessity be congested, of immense size, and the exhibits largely of an inflammable nature. The need for quick erection; the short period of occupancy during the Exposition and the demand for buildings which can be easily wrecked and have a high salvage value, all tends to prohibit the use of fireproof buildings, even if the cost of fireproof construction were not prohibitive in itself. Therefore the energies of W. M. Johnson, Chief Engineer of Water Supply and Fire Protection for the Panama-Pacific Exposition have been bent toward the finding of the most efficient and practical fire retardent or fire preventive and he has been ably seconded in this search by J. McCaughern, District Secretary of the Board of Underwriters of the Pacific. Under direction of Harris D. H. Connick, Director of Works for the Exposition, a most complete fire protective system is being installed, which will be supplemented at the proper

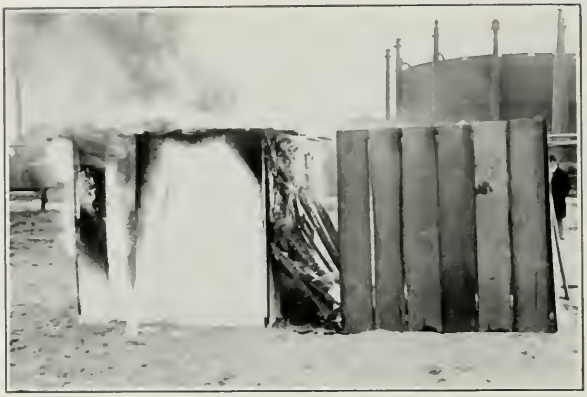


Fig. 2. Showing Fall of Unpainted Wall Against Painted One

time by a full fire fighting equipment and a drilled squadron of fire fighters. This, however, relates to the quenching of any possible fires which might start, whereas the purpose of the present article is to deal with those phases of fire retarding or prevention.

For the exterior of the buildings cement plaster has been chosen as the most satisfactory and durable covering for the buildings and which in addition, lends itself to the necessary architectural treatment. For the reasons which we have outlined above, the construction of the interior of the building will of necessity be wooden and therefore the energies of the Exposition Directorate have been bent towards finding the most suitable fire retardent for use over wooden construction. At the present time an elaborate system of tests

Fig. 3

are being conducted at Harbor View, in the buildings formerly occupied by the Fulton Iron Works, but which have now been turned into testing and modeling laboratories for the Exposition. These tests are being made on every known fire retardent paint on the market. Great care is being taken that these tests may be absolutely uniform, the paint being applied and tested by the same men, in order that the personal element may not cause a variation in the tests.

However, at the time the various paints were being investigated, prior to the tests mentioned above, "Liquid Stone" aroused considerable interest, owing to the favorable comments which it had received from the "Underwriters Laboratories Inc." at Chicago and at the suggestion of Director of Works Connick, a fire test was held on December 13th, for the Exposition Officials, this taking place near the Service Building on the Exposition grounds. This test was witnessed by the following officials of the Panama-Pacific Exposition:

P. T. Clay, Director; Louis Christian Mullgardt, Member of the Architectural Commission; W. M. Johnson, Chief Engineer of Water Supply and Fire Protection; Lewis Levy, Director of Publicity; A. H. Weatherwax, representing A. H. Markwart, Chief of Construction.

At the request of Director of Works Connick, the presence was also obtained of J. McCaughern, District Secretary of the Board of Underwriters of the Pacific. A short account of the test follows, which is illustrated by photographs furnished through the courtesy of W. W. Swadley, official photographer for the Panama-Pacific International Exposition:

The purpose of the test was comparative, two small houses being erected, about six ft. square and six ft. high, composed of pine boards; one of these had received two coats of Liquid Stone the same being thoroughly set prior to the test. The uncoated house had no roof, while the Liquid Stone house, in order to confine the blaze and make the test much more severe, was covered with a roof as seen in Fig. 1. Both houses were piled full of readily combustible nail kegs and wood which had been literally saturated with kerosene. At 3 o'clock both buildings were touched off, illustration No. 1 showing the progress of the test at eight minutes past. You will note that the kerosene in the unpainted house is about burned out, while the fire in this house was at its height. The exterior wall of the painted building was blazing slightly, but as soon as the direct blaze left it this fire went out. This was the most remarkable part of the test. The test progressed until 3:16 P. M. when the illustration (Fig. 2) shows very clearly the progress of the test; this view showing the falling of the unpainted wall against the painted one, with the blaze directly against the painted wall. You will also note by the direction of the wind that the painted house is not only getting the benefit of its own fire, but of the unpainted structure as well. In this illustration it is well to note that two walls have entirely fallen from the unpainted house; the only wall remaining intact being that towards the camera and up to this period but little damage has been done to the house painted with Liquid Stone—although the heat had been intense for the entire fifteen minutes. The third illustration (Fig. 3) shows the conditions of the two buildings toward the end of the test, being taken at 3:24 P. M. This taken after the burning walls of the unpainted building had entirely fallen. You will note that the fire in the remaining part of the painted wall, again extinguished itself; it is also to be noted that the paint still remains almost intact on the cross ridge of the roof and on the exterior walls. At the conclusion of the test the four walls of the painted building all fell outward in their respective directions; this was not due to the wood burning, but to the fact that the intense heat had literally melted the steel nails which connected the four walls together and it is readily seen that the wood coated with liquid carried more heat than the steel nails were capable of withstanding.

Oil Mixed Concrete

A BULLETIN of the Department of Agriculture, Office of Public Roads, has recently been issued which describes investigations of the effect of mixing oil with concrete.

While experimenting in the Office of Public Roads in an attempt to develop a non-absorbent, resilient, and dustless road material, one capable of withstanding the severe shearing and raveling action of automobile traffic, the writer's investigations led him into a very promising discovery. He found that, when a heavy residual oil was mixed with Portland cement paste, it entirely disappeared in the mixture, and, furthermore, did not separate from the other ingredients after the cement had become hard. The possibilities of oil-cement mixtures for waterproofing purposes were recognized and extensive laboratory tests were immediately begun to determine the physical properties of concrete and mortar containing various quantities of oil admixtures.

Many valuable data have been obtained from these investigations. The damp-proofing properties of concrete mixtures containing oil have been demonstrated very definitely by laboratory and by service tests which establish this material as one of great merit for certain types of concrete construction. It has also been shown that the admixture of oil is not detrimental to the tensile strength of mortar composed of 1 part of cement and 3 parts of sand when the oil added does not exceed 10 per cent of the weight of the cement used. The compressive strength of mortar and of concrete suffers slightly with the addition of oil, although when 10 per cent of oil is added the decrease in strength is not serious. Concrete mixed with oil requires a period of time about 50 per cent longer to set hard than does plain concrete, but the increase in strength is nearly as rapid in the oil-mixed material as in the plain concrete. Concrete and mortar containing oil admixtures are almost perfectly non-absorbent of water, and so they are excellent materials to use in damp-proof construction. Under pressure, oil-mixed mortar is very efficient in resisting the permeation of water. Laboratory tests show that oil-mixed concrete is just as tough and stiff as plain concrete, and furthermore its elastic behavior within working limits of stress is identical to steel reinforcement is much decreased when plain bars are used. Deformed bars, however, and wire mesh or expanded metal will reinforce this material with practically the same efficiency as in ordinary concrete.

A very interesting experiment showing the non-absorbent and non-permeable character of oil-mixed mortar when subjected to low pressure was made in the laboratory. Four mortar vessels, 8 inches in outside diameter, 2½ inches high and about ½ inch thick, after hardening in moist air for one week, were immersed in water to a depth of about 2 inches. A mortar mixture of 1 part of cement to 3 parts of sand was used. Vessel No. 1 contained no oil in the mixture. About one minute after immersion a damp spot showed on the bottom. After one hour the whole vessel was wet even above the water level, since the water had climbed by capillarity. Within a few days waters had penetrated the plain mortar vessel until the water level inside was the same as that outside. The remaining three vessels, made of 1:3 mortar and mixed with 5, 10 and 20 per cent of oil, respectively, have remained perfectly dry on the inside during immersion for one year.

All of these experiments have given very encouraging results and point to the use of oil-mixed mortars and concretes as a cheap and effective solution of the problem of waterproofing for a great many types of concrete construction.

* * *

"I ran across an old friend of yours to-day," remarked the chauffeur.
"Will he recover?" inquired the architect.

Build with Brick

THERE is hardly a better feature line or slogan that one can use in advertising and boosting brick, says an exchange, than the headline given above—"Build with Brick." It has the euphony, enough alliteration to make it catchy, and it goes straight to the point of interest. It carries quite a lot of the power of suggestion right along with it, and if one will use pictures of neat attractive houses that have been built with brick it will materially strengthen the suggestive feature.

This power of suggestion is a mighty strong and useful one, too, that never grows old nor loses its power if it is handled right, with enough changes to keep it from growing tiresome. Pictures of houses made of brick not only suggest this material for building as well as specific designs, but they serve an educational purpose within themselves if they are varied enough. For example, a prospective builder was asking advice about what kind of material to build with. In this case it was a woman, and she wanted a sort of bungalow type of house, about one and a half stories high in the walls, so as to get a couple of bedrooms upstairs. She confessed to an admiration for brick, but was wondering whether or not brick would look well in a house of that type. It seems that some one had told her it would not—some carpenter or lumberman, perhaps—and left her with the idea that brick shows up best in large buildings.

It is prospective builders like this that the "Build with Brick" slogan, accompanied with varied pictures showing different types of houses, would have an educational effect on, as well as carry the power of suggestion that they build with brick. And if special circulars, showing not only designs, but actual colors, too, the effect should be even stronger.

Anyway, all the time the idea to keep in mind, for personal talks as well as for the printed words of advertising, is to build with brick. Be prepared to give specific answers to questions about it, and everything else one may want to ask. They are the things that will help get the business after the prospective builder is once interested and then each new building that is good will help some to get others if you make the most of your opportunities.—Contract Record.

* * *

Archaelogists Discover Beautiful Tiles

Among the ruins of the royal palace in Shushan, archaeologists have discovered a number of beautiful enameled tiles, which once formed part of a frieze or wall-decoration. These tiles are now in the museum of the Louvre in Paris, put together to look as they did in their original position. The colors of the tiles are mostly orange and yellowish orange, blue and greenish blue. The four lower rows of tiles and the six upper rows have various ornamental shapes drawn on their surfaces and finished in different colored enamels. The middle part of the frieze is taken up with a procession of lions, striding majestically along, one after the other, with tails lashing the air and jaws open as if for a commanding roar. The two uppermost rows of tiles combine to produce a row of circular disks, like daisy heads, each with fifteen radiating petals; they are supposed to be symbols of the sun, and so, indirectly, of the divine goodness that manifested itself in most striking ways by means of the sun.

* * *

While the scientists were learnedly explaining why the thing could not be done, they were interrupted by somebody doing it.

Reinforced Concrete Convent School, Livermore, California
Welsh & Carey, Architects

Convent School Designed in Mission Style

THE accompanying illustration shows the architects' front elevation of the new Livermore convent school at Livermore, California, designed by Architects Welsh & Carey of San Francisco. The entire building is of reinforced concrete. The gravel used in the construction comes from the bed of local creeks, and there is an inexhaustible supply of this excellent material to be obtained for the cost of the hauling. The gravel forms an admirable aggregate with a low percentage of voids, and is being used 1 to 6. The cement used is Golden Gate.

The exterior will be plastered with cement mortar, and the inside of the walls is plastered with 1 to 3 cement mortar waterproofed with "Impervite."

The interior is planned on the most modern lines. The roof is arranged for the holding of out-door classes, an idea which is being much advocated, and owing to the climatic conditions is entirely practical. There are large partly enclosed porches for the use of both sisters and pupils during inclement weather. There is a complete gravity ventilating system and hot air furnace covering all rooms, and also a system of intercommunicating phones. In the second story is a small oratory for the sisters, and also an infirmary completely isolated.

* * *

New Feature in Loft Buildings

Something of an innovation in connection with buildings erected for loft purposes is a dressing room, toilet and shower bath on each floor. In the older buildings the sole idea seemed to be to provide a great spread of space, little or no attention being given to the comfort of those working therein. The buildings were for the display and manufacture of goods and the main thing sought was a big room with as little obstruction as possible. In one of the latest loft buildings erected in New York City and designed by George and Edward Blum, the innovation above referred to has been introduced. The baths and dressing rooms are in the front of the building and are 6 ft. wide by 8 ft. long. The space for dressing purposes may also be used for a lounging room.

Twelve World's Records in Building Construction

IN connection with the 30-story store and office structure now in course of erection in West Fortieth Street, between Sixth Avenue and Broadway, New York City, the builder claims that when completed it will represent the trusteeship of twelve world's records in construction. These are given as follows:

Tallest building ever built on a plot 50x98.9.

Has the greatest number of stories of any building ever built for the area upon which it stands.

Has the largest gross and net floor area of any building covering the same size plot.

Only office, loft, showroom or studio building in the world having all four sides richly ornamented in white glazed terra cotta and windows finished in gold.

Has the best light and air in proportion to its size.

Probably the only building that has not one particle of wood, fireproof or otherwise, in any part of its construction.

The tallest building of any description in the world for the width of the plot, and also has the greatest number of stories for the width.

Only building of this height having an absolutely fireproof and smokeproof tower with entrance from exterior connecting at bottom with street.

The tallest building ever erected in a side street; also has largest area for electrical display around tower in proportion to size of roof.

Only office and store building ever erected having every suite of offices above the fifth floor all corner suites, all elevators in center and windows all round on all four sides.

Has the greatest number of windows of any building in proportion to size.

Has more windows than any other building of any description ever erected in proportion to area of ground building covers.

The structure represents the highest type of steel skeleton frame construction and was designed by Buchman & Fox, architects, 11 East Fifty-ninth Street, New York City. The heating will be furnished by high pressure boilers with down feed system, so that the live steam will be carried at once to the top of the building and be distributed from there downward, being so arranged as to give a uniform temperature at all floors. High speed overhead traction electric elevators will be arranged in the center of the building so as not to interfere with the light on its four sides.

The windows, doors and all metal work will be in gold bronze and the halls and stairs throughout marble and mosaic. The building will also be equipped with approved fireproof and smoke-proof towers.

The statement is made that there will be room on the rear of the building and the four sides around the tower for a display of nearly 20,000 electric lights. By reason of the fact that the adjacent structures are of comparatively few stories the building will be a conspicuous landmark.

* * *

The Engineer and the Architect

OF recent years there has developed a close connection between engineering and architecture. These two closely allied professions are more and more inclined to overlap one another. As a matter of fact the distinction between them is only a comparatively modern one, and as the necessity for it fades away, so also dissolves the sharp division between these twin branches of the constructional profession. Only about two hundred years ago, approximately, was there any clear difference recognized between the civil engineer's work and the architect's. This distinction arose from the necessities of the time. The architects at that period were steeped in old tradition. Their only aim was to copy faithfully the historic structures of the past without regard to the progress of humanity in sanitary knowledge, heedless, too, of the new problems which

advancing civilization has to solve. Engineering at first went off at a tangent from this, and aimed in its structures at mere utility, disregarding entirely the question of beauty or artistic effect. Now, however, architects have awakened to the appreciation of modern methods and materials of construction, and adapt themselves more to the spirit of the age, while engineers recognize that the artistic standpoint must be considered by them as well as the utilitarian.

There are many branches of work in which the two could work hand in hand for the benefit of all concerned. Town planning, for instance, is a science in which the collaboration of both is essential to success—the engineer superintending all works—sewerage, water, streets, etc.—the architect designing public buildings, and working for the artistic beauty of the whole. Even in big public buildings the best result would be obtained by both working together. Take the case of a hospital—there the architect would be aided by the engineer in matters of heating, ventilation and so on. Other works there are which might be undertaken arbitrarily either by the architect or the engineer, and it is often a moot-point as to which shall be given the undertaking. It is only indeed the question of custom that has decided what sort of construction shall be given to the one and what to the other. This approximation and union of forces is a factor which both architects and engineers should welcome. It is a proof of the triumph of reason over prejudice. It tends to more broadmindedness, and practically doubles the field of operation in both branches.—Contract Record.

* * *

Mineral Industry in California, 1912

THE value of California's mineral product for 1912 will reach a total of well over $91,500,000, being an increase of $4,000,000 over the production of 1911. Great activity has been evident in the mineral industry and an increased production will undoubtedly be shown in every branch, with the possible exception of copper, (owing to the fact that the "fume trouble" has not been satisfactorily solved as yet), but the value of the copper produced will show a large increase due to the advance in the price received during the year, the average being close to 16c per pound as against 12½c per pound received in 1911.

A conservative estimate of the leading mineral products for 1912 is as follows:

Petroleum, 87,000,000 bbl., valued at	$41,000,000
Gold	20,000,000
Cement	10,500,000
Copper	5,000,000
Crushed Rock, used for all purposes	4,000,000
Brick, of all kinds	2,500,000
Borax	1,500,000
Natural Gas	1,500,000
Quicksilver	750,000
Silver	750,000
Lime and Limestone	750,000
Mineral Water, Salt and Clay-pottery	1,250,000
Miscellaneous Minerals	2,000,000
Total	$91,500,000

The remaining 26 minerals, listed as miscellaneous, which were produced in 1911, had a total value of $1,800,000, and many of them are known to have

had a greatly increased output during the year just passed, probably far exceeding the estimated $2,000,000.

Some minerals which have had little or no production in the past, and which have been receiving considerable attention from capital recently, are: Bauxite, for the manufacture of aluminum; various iron deposits throughout the State; Barytes; Feldspar; Natural Asphalt; Potash and Nitre deposits; Tellurium, and Vanadium.

While practically all the asphalt used in the State is a refined product, it is often listed with the total mineral output, in which case the total figure would approximate $95,000,000.

* * *

How to Patch a Concrete Floor

WHEN a cement floor surface begins to wear it is often desirable to patch it and the way in which this can be done to the best advantage is described in a recent paper prepared by President L. C. Wason, of the Aberthaw Construction Company, Boston, Mass. In this paper he gives the wrong way to do the work as well as the right way.

THE WRONG WAY.—Commonly a sand and cement mortar is made, some cutting is done and the mortar is put in and scrubbed with a steel trowel until smooth. It is then covered up for awhile. If the concrete under the patch is left dry it soaks up the water of the mortar. As a result, the mortar does not set. If the room is dry or hot the surface of the patch dries out and for the same reason it does not set. If the concrete under the patch is dusty the patch does not adhere to the concrete. If the materials in the mortar are not suitable, naturally the patch wears badly, particularly as it is obviously located at a point of severe wear.

THE RIGHT WAY.—Cut down the worn place at least 1½ in. This cutting should be carried into the strong unbroken concrete and the edges should be cleanly undercut. The bottom of the cut should then be swept out, clean-blown out with compressed air or a pair of bellows, if available, then thoroughly wet and scrubbed with a broom. In this way small loose particles of broken material which the chisel has driven into the surface are removed. A grout made of pure cement and water about the consistency of thin cream should be scrubbed into the pores with a broom or brush, both at the bottom and sides of the cut. Following this a stiffer grout, about the consistency of soft putty, should be thoroughly compressed and worked into the surface, which has already been spread with grout. Finally, before the grout is set, a mortar made of one part cement to one part crushed stone or gravel, consisting of graded sizes from ½ in. down to the smallest excluding dust, should be thoroughly mixed and put in place, then floated to a proper surface. Cover with wet bagging, wet sand, sawdust, or other available material. All trucking should be kept off and the surface kept thoroughly wet for at least one week or ten days.

If a particularly hard surface is required, 6-penny nails are sometimes mixed with the mortar and other nails stuck into the surface when the patch is finished. This will produce a surface which is extremely hard and durable.

* * *

To Each His Own

"I started to work on my twentieth story yesterday," said a busy looking man, "and I tell you I'm making it pay."

"You are an author?" suggests his neighbor.

"Certainly not! I'm an architect."—Exchange.

San Francisco General Contractors' Association

ABOUT the beginning of February, 1913, the General Contractors Association is expecting to move into its magnificent new headquarters in the Sharon Building, New Montgomery and Jessie streets, San Francisco. The public entrance to the quarters will be at 110 Jessie street, and there will also be a private entrance for the members through the main entrance of the building on New Montgomery street.

These quarters will be much better in all respects than the builders of San Francisco have heretofore enjoyed. The rooms are to be fitted up and furnished with the best of material, furniture, draperies, etc. No expense is being spared by the association to have everything of the best and of a character which will give tone and dignity to the headquarters for the great building industry of San Francisco.

This organization was incorporated on its present lines only two years ago, and it already has cash assets of over $20,000, not including furniture, fixtures, etc. At the present progressive rate it will, before long, be the wealthiest organization of builders in the West.

Mr. F. H. Masow, of the firm of Masow & Morrison, was the first President of the Association, and Mr. Chas. A. Day has served in that capacity for the last two terms.

Through the means of this Association the general contractors have been getting together on legitimate lines and promoting the welfare of the building business in a way which is a credit to them.

The Board of Directors is composed of eleven of the best and most responsible general contractors of this city. They have worked hard and earnestly for the upbuilding of the organization.

There are 120 stockholders in the Association and over 400 associate members. The general contractors compose the stockholder membership and the specialty contractors, material men, etc., compose the associate membership, and the manner in which both have pulled together during the last year for the upbuilding of the greatest organization of builders and contractors this city has ever known is a credit to them, and they will be rewarded in the near future by finding themselves housed in such headquarters as were never dreamed of five years ago.

The support which a large number of the architects are giving the organization demonstrates the appreciation which a worthy effort can receive from them, and is another step towards an improvement of conditions for the architects as well as the builders. A little support and co-operation from the architects can do much to improve conditions, not only for the contractors but for the architects themselves, who have suffered in the past from various evils which have been allowed to creep into the business.

* * *

On January 6th bids were received in Washington for the general construction of the sub-treasury building to be erected at Sansome and Pine streets, San Francisco.

Competitive bids were received from all over the United States. One of the San Francisco contractors, namely, Mr. Grant Fee, is the low bidder for the work, at a price of $384,300, and will undoubtedly be awarded the contract. The building is to be completed by January 1, 1915.

Mr. Grant Fee is an old-time contractor of San Francisco, and one of the best and most favorably known men in the building business. Probably no better man could be found to undertake the erection of this magnificent structure, and the work will be in the hands of a man of large experience and unquestioned ability and financial standing. Mr. Fee is also a member of the General Contractors Association.

Among the Architects

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Oakland Architectural Association

Meets Third Monday Each Month.

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Los Angeles to Get A. I. A. Convention in 1915

At the November meeting of San Francisco Chapter of the American Institute of Architects it was decided to affiliate with the Chamber of Commerce and the Civic League of San Francisco, and the secretary was directed to take the necessary steps for membership in these bodies as recommended by the committee on Commercial Bodies.

On motion duly made, seconded and carried, the advancement of Mr. Clinton Day to Fellow Membership in the Institute was unanimously endorsed.

The secretary was directed to reply to the communication of the Panama-Pacific International Exposition Company regarding the 1915 Convention of the Institute and to advise them that the Chapter had already endorsed the claims of Los Angeles to this convention but would use its best endeavors to have as many members as possible of the convention visit San Francisco at that time.

The communication from the Northern District Board, State Board of Architecture, was referred to the Legislative Committee for consideration.

After a ballot had been taken, Messrs. Merritt Reid, Albert Pissis, and Clinton Day were duly declared delegates to the 46th annual Convention of the Institute, together with Geo. B. McDougall and Sylvain Schnaittacher, ex officio, in accordance with the by-laws.

The Greater Portland Plan

The preliminary report on the Greater Portland plan has just been issued by the city plan commission of that city. This plan was prepared under the direction of Edward H. Bennet, author of the plan of the Panama-Pacific Exposition, and the associate of Daniel H. Burnham in some of his most important undertakings.

Portland's present city limits encompass about 54 square miles, and it is proposed that these shall be extended to allow for 150 square miles. The Willamette river will be improved to meet new requirements. The city's business center is fixed, although it will extend toward that portion of the city where the grades permit. Suburban highways—and the Greater Portland will include in its population communities within a radius of at least 20 miles—will be properly related to each other and to the city's main thoroughfares.

Annual Meeting of San Diego Architectural Association

The regular annual meeting and election of officers of the San Diego Architectural Association was held on Wednesday evening, December 4th, the following members being present: Messrs. Banning, Bristow, Hanssen, Harris, Halley, Hebbard, Holmes, Hoffmann, Kennedy, Keller, Quayle, Cressey, Siebert, Sherwood. The meeting was devoted entirely to business, and the following officers were elected for the ensuing year: President, W. S. Hebbard; Vice-President, S. G. Kennedy; Treasurer, G. A. Hanssen; Secretary, Robert Halley, Jr. Aside from the election of Robert Halley, Jr., as secretary, to succeed Irving J. Gill, no changes were made in the list of officers elected.

San Francisco Architectural Club

The San Francisco Architectural Club held its annual jinks in its clubrooms December 28th. More than 150 members and friends enjoyed the entertainment, and architectural skill was responsible for a greensward effect produced by a good supply of green sawdust on the floor, and numerous Chinese lanterns carried out the scene of a garden party at night.

The programme of entertainment was provided by the club's orchestra, a sketch by Clyde Payne, J. Garren, Ray Locke, E. Flanders and A. Ronda, a monologue by Irving Fellner, songs by A. Lowenthal, a Salome dance by D. R. Cantrell, items by a number of professional entertainers and wrestling and boxing matches by members of the Olympic Club. A buffet supper was served by members of the club, who discarded the white apron of the waiter for the gray one of the draftsman.

Tobias Baerwald, the retiring president of the club, was presented with a gold watch fob.

Personal

The marriage of Mrs. Irene Flint Hermans and Mr. August G. Headman, the well known San Francisco architect, occurred at the home of the bride's parents, Mr. and Mrs. Andrew Joshua Flint at Claremont, Berkeley, December 11th. Mr. and Mrs. Headman enjoyed their honeymoon in Southern California and Mexico. They are now at home to their friends at 1345 Lake Street, San Francisco.

Octavius Morgan, Jr., and Mrs. Morgan have returned from their honeymoon, having spent a month making an extended tour of the state by automobile. Practically every section with good roads was visited.

Architect S. Tilden Norton of Los Angeles has returned from an extended trip to eastern cities. Mr. Norton visited Salt Lake City, Denver, St. Louis, Chicago and New York, and also attended the sessions of the American Institute of Architects in Washington, as a delegate from Southern California Chapter.

Architect O. E. Vorce, formerly of Taft, California, has opened offices in the Phelan Building, San Francisco. While

in Taft, Mr. Vorce prepared the plans and supervised the construction of the Alvord Hotel, a $20,000 brick structure; the Callahan building, a $10,000 frame building and two schools.

Chas. H. Alden, architect, with offices in the Crary building, Seattle, and secretary of the Washington State Chapter of the American Institute of Architects, recently enjoyed an extended trip through California.

Have You This Back Number?

THE NEW YORK PUBLIC LIBRARY

Office of the Director
476 Fifth Avenue

New York, December 19, 1912.

Editor The Architect and Engineer:

Would it be possible for you to send us a copy of the issue of The Architect and Engineer of California for December, 1911? It is the only number for that year lacking from our file, and as it is not possible to have our volumes bound until they are complete, I trust that you may be able to spare us a copy. I need not assure you that the courtesy will be greatly appreciated.

Very respectfully,
J. S. Billing, Director.

Twenty-five cents will be paid for a copy of the December, 1911, Architect and Engineer.

Architect Shea Wins Competition

Architect Will D. Shea of San Francisco has been selected to prepare plans for the Young Men's Institute new $150,000 building which will be erected on the north line of Oak Street west of Van Ness Avenue, San Francisco. The new building will be three stories with a basement and two mezzanine floors. Plans provide for a modern club building, including a gymnasium, ballroom, lounging rooms, card rooms and ladies' and gentlemen's parlors.

Clinton Day a "Fellow"

Clinton Day, a well known San Francisco architect, was elected a fellow of the American Institute of Architects at the forty-sixth annual convention in Washington. The distinction of "fellow," to quote the by-laws of the institute, is conferred upon a member who in the opinion of a jury of fellows shall have notably contributed to the advancement of the profession.

Architect Blain Dead

George Blain, a pioneer architect of Northern California, died Christmas day at his home in the Willows, near San Jose, aged 82 years. Mr. Blain designed many of the older residences in San Jose and vicinity and planned and selected the material for the entire hardwood interior of the Flood home at Menlo Park. Blain was a native of New York and crossed the plains in the early fifties. He is survived by a large family.

Partnership Dissolved

The firm of MacDonald & Applegarth of San Francisco has been dissolved, and Mr. Kenneth MacDonald will continue the practice of architecture with offices in the Holbrook building, having arranged to take his father into partnership with him. Mr. MacDonald, Sr., is at the present time a practicing architect in Kentucky. Mr. Applegarth will retain offices in the Call building.

Los Angeles Architectural Exhibition.

Plans for the Fourth Annual Exhibiton in Los Angeles under the auspices of the Architectural League of the Pacific Coast are taking definite form and active work already has begun. The exhibition will probably be held during the last two weeks of February. Arthur R. Kelly, president of the Los Angeles Architectural Club, will be the manager of the exhibition and his experience and enthusiasm will provide all the necessary qualifications for this important position.

An office has been opened at 1111 Story Building, and information concerning the exhibiton will be given to anyone deisring it. Following are the committees who will be in charge of the work:

Exhibition Committee—Myron Hunt, chairman; D. C. Allison, publication; A. C. Munson, hanging; A. R. Kelly, finance; E. J. Cheesewright, decoration.

Publication Committee—D. C. Allison, chairman; Octavius W. Morgan, Jr., A. F. Rosenheim, C. H. Kysor, Chas. F. Patterson.

Finance Committee—Arthur R. Kelly, chairman; John J. Frauenfelder, Octavius Morgan, Frank D. Hudson, Frederic L. Roehrig, Arthur B. Benton.

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Following are the members of the Architectural League of the Pacific Coast: Southern California, San Francisco and Washington State Chapters of the American Institute of Architects; Los Angeles, San Francisco, Portland, Seattle and Denver Architectural Clubs.

Officers of League—E. F. Lawrence, president, Portland; John Bakewell, Jr., vice president, San Francisco; M. H. Whitehouse, secretary, Portland; Myron Hunt, treasurer, Los Angeles.

Architectural Competition.

The discussion of the plans for an architect's competition for the proposed Alameda County Infirmary building was laid over by the Supervisors last month on account of the illness of Henry H. Meyers, who has been selected as advisor. The scheme, as submitted by Meyers, calls for a competition with three prizes. This is to be advertised in due course of time.

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Vol. XXXI. JANUARY, 1913 No. 3

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A POT POURRI OF ARCHITECTURE

A "twin-house," that is to say a house for two families, is to be built in New York by McKim, Mead & White for Geraldyn Redmond and his sister, the Countess del Angier-Villars. It will cost $200,000, and in the brief space of six stories will mix old English, old Flemish, French renaissance and Italian renaissance. What's the matter with Egyptian and Graeco-Roman?

SPRINKLER SYSTEMS FOR HOTELS AND OFFICE BUILDINGS

Answering a recent comment in this magazine that Oakland hotels are without such modern fire protection as automatic sprinklers, a well known San Francisco and Oakland contractor challenges us to point out a single hotel in San Francisco thus equipped. That the subject is a live one must be admitted from the campaign that is being waged now in Southern California, favoring sprinkler systems for not only large hotels, but office buildings and hospitals. In Los Angeles an amended ordinance has been passed by the City Council and signed by the Mayor, making it compulsory to equip all hotel basements or cellars with a sprinkler system. This is as it should be for it is a well known fact that large quantities of combustible material are stored in basements of hotels and office buildings in spite of frequent inspections and rigid rules of the Fire Marshal.

TIME FOR A NEW ERA IN BUILDING

San Francisco should awaken to the need of better building. It is not enough to make the entrance imposing and have the interior flimsy. San Francisco should build for permanency. Especially is this true of apartment house construction where, so often, even a year will show great deterioration. It is true that the original owners "build to sell," but as is the case of a firm who deal in such apartment houses in a Northwestern

city, their name is synonymous with sham and deceit and even to live in one of their houses invites ridicule.

The architect is not so much to blame—for he is urged to "save," "trim," "cut-down," and "cut-out," until the architect's original plans would not be recognized. Inferior trim, poor fittings, the cheapest fixtures, unreliable materials, etc., together with single floors, absence of sound deadening materials, with the upper floors often as flimsy as a tenement while the lower floors and the entrance may have all the strength and beauty of a palace. Such methods have prevailed here for so long that it is hard to change them, but it is time now to break away from wrong precedents and build for a future San Francisco which will not be a reproach on the honesty of the present generation.

Architects Not Required to File Bonds

An opinion having an important bearing on the expenditure of the $800,000 Sacramento school bonds, or what is left of them, has been filed with State Superintendent of Public Instruction Hyatt by Attorney General U. S. Webb, dealing with the matter of whether or not architects whose plans have been accepted for school buildings are obligated to provide bonds to construct the buildings themselves within their estimates in case the contractors' figures go above the estimates.

It is held by the Attorney General that there is nothing in the present law which makes possible an affirmative answer to the question. Under the 1911 repeal of an old act, architects are obliged only to provide the plans and specifications and for a fee act as Superintendent or Inspector of the structure under construction.

In Sacramento City the Commissioners are getting ready to construct a number of school buildings, and the commission has been undecided whether or not it is lawful to require that architects should put up bonds to construct buildings after designs have been accepted and in the event the contractors submit figures above the estimates.

The law according to the Attorney General's opinion does not contemplate that architects shall be builders.

This interpretation of the law is favorable to many architects in the city who are not in the position to financially or otherwise to compete for the plans for city school structures if it were required that they produce bonds to build in case of contractors sending in high figures.

San Francisco's Architectural Club Exhibit

The sixth exhibition of the San Francisco Architectural Club will be held under the auspices of the Architectural League of the Pacific Coast from March 1 to 15. It is proposed to have at the exhibition the most complete collection of architectural renderings and decorative work ever seen in the West, and architects are looking forward to it with expectancy.

The object of the exhibition is to bring the selected work of the architects and other exhibitors before the public for the purpose of stimulating activity in building circles.

The exhibition will be illustrative of architecture and the fine arts. It will consist of drawings and models of proposed or executed work in structural, decorative and landscape architecture. There will be also sketches and finished examples of decorative and monumental sculpture, drawings and models of works in the decorative arts and photographs of executed work in all of these branches.

The club has arranged to make exhibits from Seattle, Tacoma, Spokane, Portland, Denver, Salt Lake City and Los Angeles. There will also be smaller exhibits from New York and other Eastern cities.

The drawings and models of the Panama-Pacific Exposition will be a feature of the exhibition, which is to be free to the public.

The exhibition committee is made up of W. B. Faville, chairman; G. W. Kelham, E. H. Hildebrand, August G. Headman, John Bakewell Jr., Charles P. Weeks, Harry E. Nye, George Greenwood, Percy K. Simpson, Charles F. Pratt, Edward F. Frick, Charles I. Warnecke, Edwin Flanders, Stanley Flawn, William Garren and H. A. Thomsen Jr.

We Appreciate Appreciation

Editor The Architect and Engineer:

For the past twelve months your Journal has come regularly to our "business fireside." You have given us the best that was in you and we have profited. We are hurried folks and of few words, and our business friends may not always know the high esteem in which we hold their helpful labors. Therefore, as the after glow of the old year fades into the dawn of the new, we thank you for what you have done. In all sincerity we wish you a new era of personal happiness and business prosperity. Greetings!

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Reports of Experience with Concrete for Sewers

FOLLOWING are some notes of experiences with concrete for sewers, which include also some data not reducible to tabular form:

Alameda has had concrete sewers in use for from fifteen to twenty-five years and has had some disintegration and some failures, especially in the older sewers.

Colton reports some disintegration in concrete sewers.

Los Angeles reports some disintegration in old pipe sewers, having used concrete at intervals since 1875.

San Francisco uses monolithic concrete construction for sewers, and has several types for large storm sewers, some of which cost as much as $75 a foot. Brick sewers have not been used in recent years on account of the high cost of brick. One concrete outfall sewer reinforced with expanded metal on a wooden pile foundation extending into the bay in about 6 feet of water, was shaken by the earthquake and broke transversely in about ten places within 100 feet. The reinforcement is considered to have been inadequate.

New Haven, Conn., has built some wide and shallow sewers with heavily reinforced covers, and two 36-inch circular and egg-shaped overflow sewers. Natural cement concrete sewers were built generally from forty to fifty years ago, but this use was abandoned forty years ago because they were unsuitable. There has been no trouble with the recent concrete sewers.

In Atlanta, Ga., concrete sewers by contract cost more than brick sewers, but most concrete sewers are built by county jail prisoners, the city furnishing the materials. Sewers have velocity of flow of 10 to 12 feet a second, and are thus kept perfectly clean. There is no appreciable leakage or abrasion as yet.

There has been much comment over a concrete pipe sewer some forty years old at the stockyards in Chicago, Ill., which was found to be almost wholly disintegrated when dug up recently.

Indianapolis, Ind., has used continuous plain and reinforced concrete and reinforced concrete pipe for sewers. The plain concrete was observed to have heavy, irregular coating of efflorescence, obstructing the flow, which formed when only ground water was flowing in the sewer. There was much leakage into this sewer in pipe sections, due to heavy pressure of ground water and joints not sufficiently strong to resist it.

Vincennes, Ind., has concrete pipe uniformly 2⅞ inches in thickness, reinforced with triangle mesh and tongue and bevel joints filled with cement mortar. The rule for thickness is 1 1-12 inches per foot of diameter, with minimum above stated.

Sioux City, Ia., reports concrete sewers satisfactory, but requiring closer inspection to get good material and finish and to keep forms in place long enough.

Louisville, Ky., uses plain monolithic concrete in sewers 24 to 60 inches in diameter and reinforced concrete in sewers 39 inches to 15 feet 6 inches in diameter. In the only pipe sewer contract the pipe was required to be surrounded with additional concrete and was finished monolithic. The commission has constructed no brick sewers. All leaks were remedied or reduced to satisfactory minimum before expiration of guarantees. An inconsiderable amount of efflorescence has been observed.

New Orleans has some plain concrete sewers, 4 to 6 feet in diameter, of same section as brick and costing slightly less. Thin concrete is feared in the local soil, but thick sections are used without hesitation. Large drainage canals are lined and covered with reinforced concrete. The surface of the concrete has softened at one point where the soil through which it is laid is super-saturated with gas plant wastes; sewer eight years old.

Bangor, Me., reports crushing of some concrete pipe not properly seasoned before laying.

Portland, Me., reports some 1,000 feet of disintegrated concrete pipe replaced.

Cambridge, Mass., uses plain and reinforced concrete in sewers, both continuous and in blocks, and various combinations with each other and with brick.

Concrete usually costs less than brick. A sewer laid in 1895, recently examined, is as perfect as when laid. Used in sewers as small as 18 inches diameter.

New Bedford, Mass., reports satisfactory experience with concrete sewers, and will build an intercepting sewer, with an outlet three-quarters of a mile from shore, in 40 feet of water.

Springfield, Mass., uses plain concrete in sewers with 8-inch walls, the cost being about $6 to $7 per cubic yard.

West Newton, Mass., has nearly 5,000 linear feet of 16x24 to 20x30-inch plain and reinforced concrete sewers, constructed prior to 1908, most of them having brick inverts.

Worcester, Mass., uses both plain and reinforced concrete sewers, laid continuously, with shells thinner than brick sewers. These sewers are of large size where acids from factories are largely diluted, and no disintegration of concrete has been observed.

Kalamazoo, Mich., builds all its sewers through its engineering department, and they cost less than by contract. Most concrete sewers are for storm water only, but one sanitary sewer was built last year.

Duluth, Minn., uses concrete only in outlet sewers. It has some concrete drains over twenty years old, in which no failures have been reported.

In Minneapolis, Minn., concrete sewers cost 25 to 60 per cent less than brick sewers. There are sixteen miles of them in use, some thirty years old, of 33 to 120 inches diameter. There have been no failures and there is less leakage than in brick sewers.

St. Paul, Minn., has used reinforced concrete pipe, but is now using monolithic reinforced concrete, which is somewhat cheaper than other materials. There have been some failures on account of poor materials and workmanship, but no disintegration from external action worth mentioning.

Kansas City, Mo., has opened its specifications to vitrified clay and plain concrete pipe in sizes below 30 inches, and to monolithic concrete and reinforced concrete pipe in sizes above 30 inches. Each class of material has been used by low bidders, competition being keen. Brick cannot compete in cost with the other materials. Reinforced concrete sections of special shapes and strength are used, one such being shown in Fig. 7, as used on O. K. creek in railroad yards.

In South Omaha, Neb., cost of concrete sewers runs 10 to 20 per cent less than brick in sizes 24 inches or over. One failure destroyed 120 feet of 6-foot sewer with 9-inch shell. It was caused by poor foundation and an earth fill not anticipated when design was made. There is slight disintegration of sewers carrying discharge from meat packing plants, and there is a slight growth in the same sewers.

Cincinnati, O., has constructed but one plain concrete sewer, and one reinforced concrete sewer is about to be constructed. Three-ring brick is used, and a thickness of 8 to 14 inches in reinforced concrete. The plain concrete sewer, 6 feet diameter, has 9-inch shell. The 8-foot brick sewers average $1.57 per linear foot per foot of diameter, the average being based on ten contracts and twenty bids, with sizes varying from 2½ to 13 feet diameter. An 8-foot sewer cost $12, or $1.50 per linear foot per foot of diameter, and a 6-foot sewer cost $1.67. The 6-foot plain concrete sewer cost $7 a foot, or $1.17 per linear foot per foot of diameter.

Cleveland, O., constructs continuous plain and reinforced concrete sewers and has a small amount of Parmley reinforced block sewers. Reinforced concrete is a little cheaper than brick, though some contractors bid lower on brick than on concrete on the ground that there is less risk in the use of brick.

Dayton, O., has adopted a rule to use concrete in storm water sewers only in diameters of 30 inches or over. Vitrified pipe is used up to 15 inches and double-strength vitrified pipe from 15 to 30 inches, with 3-foot lengths. Two sanitary trunk sewers were built of plain concrete and one large storm sewer of reinforced concrete. There has been some slight attrition in flow line of storm sewers, due to scour, and all new concrete sewers have 120 degrees of the invert lined with vitrified brick. A 9-foot reinforced concrete sewer cost $6.38 per linear foot, exclusive of trenching and appurtenances. There have been some unimportant failures in arches of old two-ring brick sewers. Plain concrete sewers have shells of thickness one-eighth of diameter, with minimum of 6 inches.

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Good Roads for San Mateo County.

San Mateo county is contemplating a bond issue for $1,204,600 to give the county 104 miles of good roads. This expenditure, in connection with the State's outlay in reconstructing El Camino Real through San Mateo county, will put San Francisco's southern neighbor in fine feather, ready to receive visitors and attract them as permanent residents.

San Mateo county is of unusual topography. It consists of hills and mountains bounded on the west by series of the seaside valleys and on the east by the level plain that skirts the bay shore. These two level stretches are connected through the mountains by two main passes, the Crystal Springs and Pilarcitos Creek pass, through which a road links San Mateo and Belmont on the east side with Halfmoon Bay; and the Woodside, San Gregorio creek pass, through which the road joins Redwood City and San Gregorio and Pescadero.

The purpose of the proposed bond issue is to rebuild the road along the ocean shore from Colma to the seaside, and skirting the picturesque coast line, through the towns that have been built along the railroads, as far south as Pescadero, and to reconstruct the roads through the hills.

The coast line road will be built of water bound macadam, 16 feet wide, with dangerous curves eliminated and the grade reduced to 5 per cent, where, in places, it is now as high as 11 per cent.

The road that will connect San Mateo and Belmont with Halfmoon Bay will require 11.05 miles of new construction, partly asphalt and partly, west of Crystal Springs, lake macadam. This road will be joined at Crystal Springs by a road from Belmont, 6.34 miles long, partly asphalt and partly macadam.

The Redwood City-San Gregorio road will be 25.51 miles long or two miles shorter than the present road. From Redwood to Woodside the road will be of asphalt, 16 feet in width, and from Woodside to the coast it will be macadamized for 12 feet in width except on the grades, where it will be 18 feet.

Briefly the total construction proposed is 104 miles, of which 23.7 miles will be asphalt and 80.3 macadam, and the maximum grade will be reduced from 12 per cent to 7½ per cent. The cost is to be $1,204,000.

HEATING AND LIGHTING

Plumbing and Electrical Work

Examples of Modern Lighting Practice—Concealed Lighting

By Edgar H. Bostock*

THE best light for an auditorium or large room would of course be?

Continuous daylight!

Which would be best defined as light of sufficient intensity for purpose needed permeating the room from without

If we accept this as correct, then a definite basic fact is at hand upon which to work in seeking the best results in artificial lighting

In approximating daylight, the salient facts to be considered with particular reference to each installation are the strength of light source, and the placing and character of the medium through which the light must enter the building.

Probably the most effective way to attain the object sought would be to permit light rays to enter so that they may be projected vertically upon entire floor surface, and to do this through dome lighting, if possible, making the entire ceiling a distributing medium.

Architecturally, this is not always possible, and we must concern ourselves with the best means at our disposal.

Liberties may have to be taken with architecture; indignities perhaps offered to decorative schemes, and new constructive methods called in; but does not good lighting justify the end, and if so, then should not ceilings be designed with a maximum of space to be used for lighting purposes until perhaps we reach that ideal room which shall contain no interior light source?

The light source available may be either gas or electric in units of high intensity, though gas is handicapped heavily by the necessity for ventilation which cannot be met in dome lighting, only in exceptional instances where there is an unusual amount of head room; and in

*Extracts of an article in the American Architect.

electric work arcs are also somewhat inconvenient, and the best results heretofore have been attained by metal filament lamps of high intensity.

The glass through which, if we adopt a system of dome lighting, we must transmit the light is perhaps the greatest problem, but fortunately, this is a mobile material, and adapts itself to new types and forms readily, as it must needs do; when we seek in the same material maximum diffusion with minimum absorption, and ask at the same time that it transmit a "white" pleasing light, and yet have its mosaic effect in harmony with the varied decorations surrounding it.

There are numberless types of sheet glasses made in large size sheets from which panels may be cut to fit openings such as would be used in the average dome.

Some of great deflecting power and very low absorption for use in high ceiled rooms; others of higher absorption for closer view; some to project light in definite angles; some that combine with these colors a corrective color value; some that get all good qualities of "sanded" or "etched" glass without its dirt-gathering qualities, and a host of others for special needs.

The inception of this idea probably came from instances where light was used above art glass domes as a means of bringing out their design and beauty, and possibly the first instance of the employment of a glass ceiling or screen solely for the purpose of lighting is the Engineering Societies Building, New York City.

This was a difficult problem, as no particular thought was given to the lighting until after the plans were matured, but when placed in the hands of the engineers, was studied, and a scheme evolved that has been the subject of much favorable comment, and shown the way to others.

The structural problem was in itself a difficult one to solve if dome lighting was resorted to.

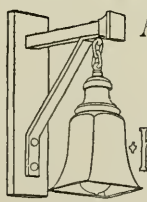
Two sets of girders were used dividing the ceiling of auditorium into three panels, and these panels faced with the glass panels. The maximum distance between bottom of floor beams and glass panels was 17 inches, in which confined space only shallow incandescent lamps were used so as to remove actual light source as far as possible from face of glass panels, and to allow the use of glass with low co-efficient of absorption, and get good distributive qualities. After trying a large number of samples of glass under conditions approaching those actually to be used, a silver ripple glass was selected and placed in the panels with splendid results.

The glare problem was entirely done away with, good light procured at even less cost than originally figured, and it seemed as if in use the dome lighting gave a feeling of space to the room that added to its beauty and comfort.

The project when finished gave even better results than had been hoped for, but was so much a step in advance that four years elapsed before any large work along same lines was undertaken.

This was a rather more ambitious undertaking, the lighting of the banquet hall in the new Allegheny County Soldiers' Memorial Building, Pittsburgh.

In this case, the engineers decided in favor of lighting the banquet hall entirely through the glass sash in the ceiling, and furthermore, that nothing in their appearance should let anyone determine the given points above at which the light originated; the problem was made more difficult by the fact that very high in-



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tensity of light was to be used to bring out the peculiar beauty of the decorative scheme.

It might almost be said that the color of the decorations demanded some such equable distribution of the light as intense shadows and unequal lighting would have destroyed the beauty of the hall.

Very thoroughly did the engineers study this matter, and finally had built an installation corresponding with one of the actual sash to be installed, and after numerous tests settled upon one form of glass known now as "Deflex" as sash facing in combination with a deflective trough of same glass; as a warm golden light seemed to best harmonize the interior of the hall, and at the same time give a cheerful light, this facing glass was made in a slight amber tint, No. 1½ Deflex.

High intensity Tungsten lamps were used mainly, though some enclosed arcs and some vapor lamps were placed in series so that combinations of color might be obtained.

In dome lighting, engineers had often considered the use of alabaster as a transmissive material, but its almost prohibitive cost has kept it beyond their means usually, and in searching for something very near it, turned to the glassmakers who produced the alabaster type of glass now coming into use.

The first use of such glass in domes was in the palm room of the Ritz-Carlton Hotel, New York, and anyone entering this room is at once struck by the quality of the transmitted light.

The type of glass used here is very efficient. It diffuses and transmits light by virtue of a peculiar condition whereby it carries in suspension numberless small crystals which break up light during its passage, thus giving very low absorption in combination with great diffusive power and a clean surface. Various types of this glass will undoubtedly be used very much in future.

As the use of dome lighting grows, it is presenting peculiar problems. For instance, one recent installation in which it was desired to get fairly strong light with high intensity lamps had only 15 inches room in which to place installation; this was overcome by using a denser alabaster type glass known as "Equalite."

Undoubtedly, the future holds in store great things for this style of lighting, but it must yet solve a good many problems to attain its highest results.

There must be developed shallow lamps of high intensity that require little ventilation; new glasses that will diffuse and direct light as wanted, and the design, bend and shape to domes themselves that will keep in touch with architecture.

How the Architect Can Assist in Eliminating Noisy Plumbing.

MOST of the noise of plumbing work can be traced to four different causes, any one of which can be easily and inexpensively eliminated. Noisy water closets are due chiefly to the singing and hissing of water flowing through the supply pipe; to noisy ball cocks, which close so slowly that a disagreeable hissing noise is evident for sometime before the water is shut off; to the way the flushing water strikes the contents of the closet bowl, and to the dashing of water against the sides of the soil stack when flowing to the sewer. The noise due to water flowing through the supply pipes can be eliminated by making the fixture branches sufficiently large so that the velocity through the pipes will be very low. This is where the architect can contribute to the noiselessness of the plumbing, by specifying large size water supply pipes, says a writer in Modern Sanitation.

He can still further improve his work by investigating the merits of closets more closely, and not assume that all closets will work equally well. Manufacturers must supply goods to fill the demand already created and for this purpose must carry an extensive line of goods suitable for all places, conditions and prices. In many buildings the noise of a water closet is not objectionable, so long as it can be had at a cheaper price than the noiseless kinds, and to fill such orders the manufacturers must stand ready. In the better class of work, however, such as private houses and hotels, noiseless closets are preferable, and the architect will do well to look carefully into the merits of the various combinations, so that when in need of noiseless goods he can specify them. Knowing the quality of the closets he specifies he should then insist upon getting these fixtures and no other.

The design of water closets influences to a great extent the noiselessness of operation, and here the law of the survival of the fittest should intervene to eliminate in time the less desirable. This probability is the more likely as, in proportion as closets are more sanitary and satisfactory in other ways, they likewise are less noisy. Siphon-jet water closets, which are the most nearly perfect of any closets yet designed, are by far the least noisy; the water is removed from such closets by siphonic action, induced by a submerged jet, and only sufficient water flows down the sides of the bowls to flush the surface.

The final cause which contributes to the noise of water closets is the washing of water against the sides of the soil pipe. When this pipe from the bath room passes down a partition alongside

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of a dining room or living room, as it often does in private houses, the noise caused by the discharge of a closet in the bath room becomes quite perceptible and very disagreeable. Noise from this source can be deadened to a great extent by installing three-inch instead of four-inch soil pipe. In the smaller pipe there is less room for the water to be dashed about in, consequently the impulse which produces the noise will be less; in the second place, the smaller the pipe the less the vibration, and a correspondingly smaller sound wave. The sound produced in a soil stack can be still further reduced by packing it in some non-conductor of sound and here, again, a three-inch pipe lends itself better than a four-inch pipe to the packing, for with a three-inch pipe there is more room in an ordinary four-inch partition. Filling that section of the partition between the two studding where a soil pipe is concealed with cement or mortar will deaden the sound so that if a three-inch pipe be used little or no noise will be perceptible.

When all the precautions outlined in the foregoing paragraph are complied with there will still remain some little noise in the bath room. This might not be more than the splashing of a bather in a bath tub, but this sound can be deadened by making the walls surrounding a bath room sound-proof, and by hanging sound-proof doors in the door openings.

Another source of noise in plumbing is due to water hammer in pipes, or to vibration of loose parts of a faucet when water is running. The remedies for these noises are so obvious that the plumber, whose work it is, can easily eliminate the cause. Water hammer can be avoided by using slow-closing cocks and faucets and placing air chambers wherever they are required in the system. It may also be reduced to the minimum by installing such large supply pipes that the velocity will be reduced to the minimum. Noises due to loose parts of a faucet can be easily remedied by making tight the loose parts. In conclusion, it may be said that the architect who designs and the plumber who installs noiseless plumbing will give far greater satisfaction to their clients than those who design and install noisy plumbing, and it is pleased clients who advertise a business and bring return orders to the office.

Heating Pointers.

By F. H. SPRAGUE*

THE subject of heating is very wide, and I shall not at this time attempt to cover it in all its phases. It would be impossible for me to give you set rules covering the subject, as only such items as the size of boiler necessary to supply a certain amount of radiation, or, how much radiation can be secured on a certain size pipe under given conditions, etc., are fixed. Aside from items of this character, the design of a heating plant for economical operation, and its installation, are dependent on working out the details peculiar to the particular point in question.

When a building is designed and estimated, it seems usual to leave the question of heating, the alloting of space for apparatus, the type of system, and the cost, until after all the points of design and construction have been permanently

*Paper read by F. H. Sprague, heating engineer, Vancouver, before the Victoria Chapter, British Columbia Society of Architects, at Victoria, Nov. 7, 1912.

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settled. This, in fact, applies to all of the mechanical equipment, and if the estimates on the work run too high, the first thing to be cut down is the mechanical equipment.

The person assuming the responsibility for the design of a plant, be he engineer, architect, or contractor, should prepare the plans in such a way that the work can go forward without constant personal supervision. Weak and faulty plans are often exceedingly expensive in the long run for some one.

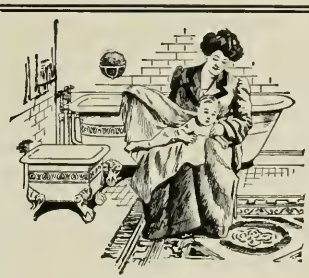
For example, if there is an offset required in the supply main, it should be shown, if a rise or drop is required it should be marked, and throughout the work the fact should always be borne in mind, that the plans may be used by a man who has no imagination, is not an engineer, and is simply reproducing in the building what he sees before him on the plans.

This last point is the cause of many poor heating plants, and much contention relative to contracts. Often in the letting of contracts, weak plans and flexible specifications make necessary the awarding of contracts to doubtful hands, on account of low tenders, when the builder is depending on the looseness of the specification to rob the contract, having no personal reputation to lose; he is also unable to estimate the contract accurately.

One of the first points that should be settled as soon as the working plans in a building are started, is the size of the boiler room, and the type of heating system. The engineer, if one is to be employed, should be called in at that time, and not after the plans are finished; he can then tell the space required for the apparatus, and the approximate cost, thus saving the trouble of changing partitions, and sometimes making more expensive alterations. If this were done the average heating system would be better, and cheaper to install, and a considerable portion of that hard-to-explain item, "extras on the work," would be cut out. We will confess that it might be a startling innovation to have a contract completed, and no extras.

The item extras depends to a great extent upon the specification. If this covers the work properly, the charge for outside items can never be excessive.

On the other hand, when there are no plans prepared, and several contractors submit tenders on the work, competition is not secured, prices are simply obtained from each man on what he thinks should go in the building, and no two of the men will have figured the same apparatus. In fact both their figures and their ideas may be as far apart as the poles. The cheapest possible contract can be obtained in this way, which is usually a makeshift proposition. For example, I will cite a case of this kind which came to my attention in New Westminster, recently—a small hot water system was required in a building, and a short specification was prepared. Four figures were submitted; the lowest bidder guaranteed to heat the building with 800 square feet of radiation, the highest thought 1200 sq. ft. necessary. To show how proper plans and specifications will affect tenders, I will refer to a set of plans and specifications, for a high school building in Vancouver, Washington, designed last May, upon which my estimate was $10,000. Sixteen contractors submitted figures, the lowest was $10,646, the next $3 higher,



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and the highest tender was only $1500 above the low man. I am giving these figures to show the difference between employing an engineer who is a specialist in working out the details, and a contractor.

To go back to the question of designing, the points to be observed are, as low a first cost as is possible without stinting the plant, economy in operation, and careful design of a plan of type and detail best meeting the requirements peculiar to the situation. To summarize:

In a modern building the mechanical equipment is of vital importance, and its selection and designing should receive careful and skilled attention.

Object to Cement Pipe for Sewer Purposes.

The San Diego Union, of Dec. 10, prints the following:

"Unqualified approval of the objections made by City Engineer E. M. Capps to the proposed laying of cement sewer pipe in San Diego was expressed by H. Clay Kellogg, a prominent consulting engineer of Santa Ana, who during a visit of several days in San Diego, has made a careful study of the situation in the interest of his own city and, in particular, familiarized himself with the output of the Glazed Cement Pipe Company. Mr. Kellogg, who as a hydraulic engineer, has had twenty-five years of practical experience, built the present Santa Ana sewer system in 1897, and the Corona sewer system in 1909. He is now engaged as consulting engineer in the construction of a sewer system in Orange and is also superintending sewerage extension work in Santa Ana.

"'My opinion may be of some value,' said Mr. Kellogg, 'as that of a disinterested outsider. Mr. Capps and I are as one, I think, in our objections to cement pipe for sewer purposes. In my experience it has never come up to requirements and I have never encountered any process or preparation that could make it do so. In the first place cement pipe cannot withstand the sewage acids. They eat into it and destroy it.

"'A further objection, which may not have been touched upon here, is found in the fact that in countries like Southern California, where the soil is dry, it is customary to grow shade trees on the streets adjacent to the sewer pipes. There is naturally some seepage at the joints of cement pipe, especially when it is new which often forms so strong an attraction for the roots of these trees that in many instances they force their way in between the sections, causing leakage and often clogging and breaking the pipes.'"

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According to experts the "mushroom" construction is not only stronger but by far the most economical of any other fire-proof system now in vogue and has successfully stood the severest tests, inspection and criticism of eminent experts. Mr. Turner invented the "mushroom" construction in 1905 and all the other cantilever flat slab construction now offered are imitations and infringe on his broad patents.

The Industrial Engineering Company of San Francisco, California, is representing the mushroom construction and is ready to give information and submit catalogs, sketches and estimates free of any charges or obligations.

Great Demand for R-W Products

The truth of the statement that "the question of getting the dealer to sell more goods for the manufacturer simmers down to a question of showing him how to do it" has been proved by the Richards-Wilcox Manufacturing Company.

Some few months ago the Richards-Wilcox people launched an extensive advertising campaign directed to the consumer through farm and building papers. This nation-wide publicity campaign was and is backed by attractive booklets, ads for the dealer's local paper, and a dozen

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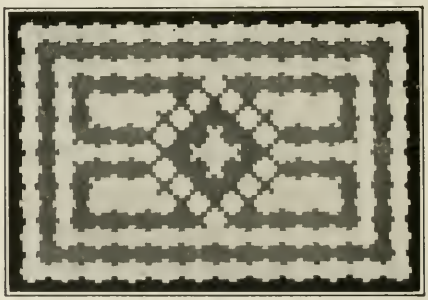

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and one other effective selling stunts planned for the retailer by the Richards-Wilcox Service Department.

In a word, this enterprising concern of Aurora, Illinois, showed the dealer how to sell their products.

The results? Dealers all over the country are selling more Richards-Wilcox Door Hangers than ever before, and many of them are enjoying an increased business in other lines, for the Richards-Wilcox Service Department has untangled many knotty "store problems" and mapped out many result-producing selling plans used in connection with goods that were not manufactured by the Richards-Wilcox Company.

Sunshine in Every Cell

Following are some of the features of the plans for the new state penitentiary which is to be built at Joliet, Ill., at a cost of $3,500,000:

Sunshine in every cell.

Constant supervision of prisoners from one central point.

Circular cell houses connected with a central dining hall.

Separate heating and ventilating arrangements, assuring the maximum effect for health of inmates.

The plans, drawn after three years' study of prisons in this country and Europe, have been submitted to Governor Deneen. The cell houses are circular structures about 120 feet in diameter. Instead of an open cage of steel, heavy glass will be placed between the bars, so as to make an inclosed room of each cell.

New Chapter Members.

The following new members were elected by San Francisco Chapter of the American Institute of Architects, at the November meeting: Messrs. Alden W. Campbell, Peter J. Herold, Edward T. Osborn, Geo. C. Sellon and Frank H. Schardin.

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A Plea for More Time.

H. G. Hooper, a Los Angeles contractor, writes to the Builder and Contractor of that city the following:

Dear Sir:—If your journal ran a charity column I beg to believe there wouldn't be but few contractors and others having to do with estimating building contracts who would appreciate a word spoken there in behalf of more reasonableness in the matter of time on the part of architects who call for quick bids upon their work.

Contractors often have to hazard capital in contracts they have not been allowed sufficient time to properly figure, which is staking money upon little better than guesswork. How many banks would do it? Does the investor do it? Contractors are called in in a hurry; they have to run over plans in a hurry, put in bids in a hurry, sign contracts in a hurry, commence work in a hurry.

This process of making—buildings—quick—doesn't that describe the process? has come to be something like a grab-bag speculation. Many people do recognize that builders are not second sight-seers; that they do require to study plans and estimates with pains and not without expense; as often seems not to be recognized. And the builder does not always pay the piper; in fact, nearly everybody involved stands some of the ill effects of the unbusinesslike practice. Probably all concerned would welcome a little less hustle and haste. Would it not be a relief all round to apply here the doctrine of reasonableness?

Honor for Architect Mead

The National Institute of Arts and Letters recently announced the award of the gold medal of honor to William Rutherford Mead, architect. A similar medal is awarded annually by the Institute to some American for distinguished services in the creation of original work in arts and letters. It is awarded in a different branch of work each year, former recipients having been St. Gaudens, for sculpture; James Ford Rhodes, for history; James Whitcomb Riley, for poetry.

Reliance Company Issues Splendid New Catalogue.

The 1913 Catalogue of the Reliance Ball Bearing Door Hanger Company, 1 Madison Avenue, New York, contains more up-to-date information on elevator door hangers and elevator door locks than any of the previous issues of this firm's unusually illuminating printed matter.

The Reliance Company has made a number of improvements in hanger construction during the past year, and has also brought out several new devices in both hangers and elevator locks. On the last page we notice a cut of the Company's new factory, which they built and moved into last spring, and the following caption beneath it: "Our factory's facilities have been increased five-fold within the last nine years—another proof of the popularity of the Reliance Ball Bearing Door Hangers."

This new plant enables the Company to turn out more than three times as many hangers as they were able to manufacture in their previous plant. The new factory was necessary, as the demand for "Reliance" specialties has been increasing so rapidly that the firm has had great difficulty in filling its orders.

Every architect and builder should have a copy of this interesting catalogue on file.

Robert W. Hunt & Co. Have Prosperous Year

Robert W. Hunt & Co., Engineers, at San Francisco, with office at 418 Montgomery Street, have the pleasure of announcing the close of a very successful year. The fall months of the year have been the largest in their 25 years existence. It is significant to say that they are now handling the inspection of all equipment and materials for the entire Harriman lines under arrangements made by their Consulting Engineer, Mr. John D. Isaacs.

Their work in structural lines has been very extensive, and they are inspecting materials for the Equitable building of New York, the Railway Exchange of St

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Louis, the Butler Bros., Conway building and Field Museums of Chicago. The Arlington Hotel of Washington, the Busch building of Dallas, and numerous others throughout the country. They this year have handled the inspection of cement and steel for California buildings as follows: St. Ignatius Church; the Kahn building, and many buildings constructed by the P. J. Walker Co.

Their Engineering Department have handled many noteworthy undertakings. Consulting and constructing engineers; the Nebraska Portland Cement Co., the Coal Creek Drainage District reclamation of submerged properties, the Victor Chemical new power plant. Operating Engineers; the Field Mining and Milling Co.'s zinc and lead ore properties; Development of coal properties of British Collieries (Brazeau) Ltd. Alta.; Examinations and reports of zinc porperties of Three Forks, B. C., and of iron properties of Upper Peninsular of Michigan.

Their San Francisco office with its chemical and physical testing laboratories will be pleased to welcome any testing or investigation service that may be desired.

Machinery Hall

W. W. Anderson, a San Francisco contractor, will build the Machinery Hall on the World's Fair grounds for $509,900. Nine other bids were received by the Panama-Pacific International Exposition Company.

The following is a list of the bidders and the amounts: W. W. Anderson Company, $509,900; Strehlow-Freese, Peterson, $519,900; Neil A. McLean, $527,000; Commary-Peterson Company, $649,209; P. T. Quinn, $569,000; Lange & Bergstrom, $516,499; Lindgren Company, $569,000; M. Fischer, $542,000; McLeran & Peterson, $599,000; and Fred P. Eischer, $593,616.

The exposition company will furnish the lumber for the building and a bond of 50 per cent will be required of the successful bidder. The contract carries a penalty of $100 per day for delays beyond the 248-day limit for the construction of the palace. Clarance R. Ward and J. Harry Blohme are the architects of the building.

About twenty-five firms took out plans but only nine submitted bids.

Firedoor Hardware

The latest rules of the Underwriter's Laboratories regarding firedoor equipment calls for very careful manufacture of the doors and equipment and rigid requirements as to installation. While there are a number of styles of doors which meet the requirements those made by the Richards-Wilcox Mfg. Co., 115 Third Street, Aurora, Ill., seem to be particularly well designed for the purpose.

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Not only must the door work easily, but it must be at all times ready to close automatically in case of fire. The Richards-Wilcox Co. have recently issued a catalogue of firedoor hardware which shows the several styles of firedoor fixtures, tracks, hinges, etc., as well as instructions for installation. This catalogue is of value to the architect in designing the building, to the contractor in erecting the work; and to the owner as showing exactly what is permitted by the Board of Underwriters and what is recognized as the last word in fire protection. This valuable catalogue is sent free on request to the Richards-Wilcox Company.

Costly Mosaics are Being Replaced.

The Exposition crowds of 1915 may see the famous mosaics of the chapel at Stanford University as they were six years ago. The originals were destroyed in April, 1906. A contract has been let, however, for their duplication, which will cost $80,000.

The university trustees have let the contract to a Venetian mosaic artist, who has been at Palo Alto for some time completing preliminary details.

As the original drawings were preserved, the work can go ahead with little delay. It will be three years, it is announced, before the mosaics are completed.

Shingle Roofs and the Fire Hazard

Roofs form a general hazard, to be carefully considered. At the works of a machinery company a building 700 feet long was almost completely destroyed because of an unprotected roof. The roof was combustible, and not fitted with curtains (fire stops). A good fire department and excellent hose streams were available, but there were no automatic sprinklers; the trusses softened under the heat and the roof very promptly collapsed upon the machinery below.

Aside from internal fires, roofs should be protected from external ignition. Locomotive sparks have caused many fires, their favorite lodging place being shingled roofs. A paper mill not long ago, with such a roof, was entirely destroyed by fire starting in this way.

But perhaps the worst example on record of the hazard of shingle roofs was the Houston conflagration in February last year, which resulted in a monetary loss of over four million dollars. More than two hundred buildings were destroyed, including ten of the largest industrial plants in the city. The presence in the area that burned of a large num-

NOTICE TO CONTRACTORS.

Office of Yosemite National Park, Yosemite, California, November 30, 1912.—Sealed proposals, in duplicate, will be received at this office until 2 o'clock p. m., February 1, 1913, for the construction of four reinforced concrete arch highway bridges as follows: Bridge No. 1, one arch 105 foot span, 12½ foot rise, and 36 feet clear width. Bridge No. 2, one arch 20 foot span, rise 3½ feet, width 17½ feet over all at crown. Bridge No. 3, same dimensions as No. 2. Bridge No. 4, two arches, 20 foot span each, rise 3½ feet, and width 17½ feet over all at crown. Bidders must bid on each bridge separately, but may give a lump bid on all four bridges, or on any two or any three of the bridges. The bridges are to be constructed on the floor of the Yosemite Valley, and it is suggested that prospective bidders personally inspect the various sites before submitting proposals. Each bid must be accompanied by certified check for $500 payable to the order of the Secretary of the Interior, which sum to be forfeited to the United States should the bidder fail to enter into contract with satisfactory surety to the full amount of his bid within 30 days from notice of award. The right is reserved to reject any and all bids and accept bids on any one, two, or three of the bridges, as may be deemed most advantageous to the Government. Plans, specifications, and blank forms of proposal may be obtained on application to the Acting Superintendent of the Yosemite National Park, Yosemite, California, and may be seen and examined in the U. S. Engineer's office, Room 405 Custom House, San Francisco, California, and the office of The Builder and Contractor, Los Angeles, California. Wm. W. Forsyth, Lt. Colonel of Cavalry, Acting Superintendent, Yosemite National Park.

Approved, Lewis C. Laylin, Assistant Secretary of the Interior.

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ber or structures clad with shingle roofs was directly responsible for the rapid spread of what would have been an easily controllable blaze. As a result Honolulu has passed an ordinance absolutely prohibiting roofs of shingles or other combustible material. Several structures with non-combustible roofs escaped with slight damage, but a number of cotton mills so clad were destroyed through sparks falling down open ventilators.

San Francisco City Hall Will Soon be a Reality.

It is stated authoritatively that actual construction on the new San Francisco City Hall will begin on March 1.

The clearing of the site, bounded by Van Ness avenue, McAllister, Polk and Grove streets, is already well under way.

All told, it was necessary to expend $1,309,178 which embraced twenty-four separate pieces of property to acquire the civic center. Of these but one went through the full course of condemnation proceedings. Between the old and new City Hall sites there remain only eleven out of thirty parcels to be purchased for other Civic Center buildings.

Work on the construction of the auditorium will start March 1 and the building will be finished in a year, it is promised.

The building committee of the Supervisors and Consulting Architects Bakewell and Brown have under consideration the character of stone to be used for the exterior finish of the new City Hall.

In the conferences which have been held there has been a general discussion of limestone and granite. The merits of each appear to be so evenly divided that the conclusion has been reached to include both in the specifications and then weigh the merits of the two with their relative cost. Granite, it is admitted, is the more durable, but it is also much more expensive.

Travertte may be finally determined upon if the prices submitted appear to be in accord with the market price and not attempt is made by the contractors or contractors to enter into a combine to force the city to pay an exorbitant price.

To guard against any such combination it has been decided to include [illegible] in the specifications.

Marble will enter largely into the interior and corridor finishing, but exactly as it shall be [illegible] an open question which has not [illegible] definitely determined. Cost may also enter into the award of the contracts for marble and for that reason different kinds of marble will be named in the specifications.

Edison May Help With Poured Concrete Schools

The daily press reports that Thomas A. Edison the inventor has been asked to help the Berkeley Board of Education in the plans to build "poured concrete" schoolhouses. Edison has announced that though too busy to do anything at present he will help later.

The communication was sent to Edison by Commissioner John A. Wilson, who has been spending much time in a study of the cottage plan of schoolhouses which, he believes, will solve the present school problem. The cottage plan is said to be especially practicable for California weather.

Lighting the Panama-Pacific Exposition.

The lighting features of the Panama Exposition will be most extraordinary and preliminary plans already are being discussed by the architectural commission. The illumination will be in the hands of Daniel Ryan, an electrical engineer of New York. Ryan illuminated Niagara Falls and furnished the lighting effects for the Hudson-Fulton celebration. Models have been prepared of the different courts and building and experiments from the standpoint of lighting are being made.

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Banquet of Meese & Gottfried Officials, New Year's Eve

Yuletide Gathering of Meese & Gottfried Workers

"There was a good old time in 'Frisco town,
For the good old smoke went up, up, up,
And the good old grub went down."

The annual convention of the Meese & Gottfried Company's high officials, managers, salesmen, engineers and department heads from Seattle, Portland, Spokane, Los Angeles and San Francisco was held in San Francisco December 30 and 31, 1912.

Constant Meese, President, made the opening address on December 30th and F. Gottfried, Secretary-Treasurer, opened the second session on the 31st.

Many matters were discussed and important papers read—the following being of especial interest:

Speed Reducers, W. C. Conant, San Francisco Manager; Silent Chain Drives, H. T. Hesselmeyer, Chief Engineer; Washing and Screening Plants, F. J. Bodinson, Sales Engineer; The Factory, W. A. Goellner, Superintendent; The Draughting Room, G. E. Taylor, Chief Draughtsman; Screw Conveyors, W. C. Conant, San Francisco Manager; Rope Drives, H. T. Hesselmeyer, Chief Engineer; Elevating and Conveying Machinery, F. J. Bodinson, Sales Engineer; Purchasing for a Manufacturing Plant, Dave Young, Purchasing Agent; Advertising, J. A. Bried, Advertising Manager; Salesmanship and Marketing of Our Products, M. A. Zan, General Sales Manager.

The annual wind-up dinner was held at the Commercial Club where a most enjoyable time was had and where a bond of fellowship was forged which will hold all the good fellows together for many years to come.

The genial sales manager, Mano A. Zan, contributed greatly to the jollity of the occasion by forcing extemporaneous speeches on many good men who would rather have spent a month at their chosen work.

However, the Spirit of Good Fellowship, which alone had ears and eyes that night, saw no embarrassment and heard nothing but expressions of good feeling and fidelity to the company, that had brought them together to feel the brotherly grip of each other's hands.

At the conclusion of the dinner, H. T. Hesselmeyer, Chief Engineer, in behalf of his co-workers and as a slight mark of their esteem, presented handsomely engraved solid gold pocket knives to both Constant Meese and Fritz Gottfried—the founders of the institution.

A New Year's resolve was made by the fifty odd men present that they would pull as "one man" for the good of the firm and make the Meese & Gottfried Company in the future, as in the past—the leading manufacturer of Transmission, Elevating, Conveying and Screening Machinery on the Pacific Coast.

"For there was a good old time in 'Frisco town,
The good old smoke went up, up, up,
And the good old grub went down."

High Quality Varnishes

The Moller & Schumann Company, varnish makers, are located at 1022-1024 Mission street, San Francisco, where they carry a full line of Architectural Varnishes and Enamels.

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The resident manager is Jas. A. Bremner, who is known favorably to the Paint Trade on the Pacific Coast, and who has at his command a staff of experienced salesmen who visit every town of any consequence, from the Canadian border to Mexico.

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The installation of the Dahlstrom Products totally eliminates the possibility of a fire from spreading by the simple method of starvation. A fire, will not, cannot travel, from its point of origin for the Dahlstrom Products offer no additional fuel for it to feed upon. To accomplish this final, necessary and absolute degree of fireproofing nothing of an artistic nature is sacrificed.

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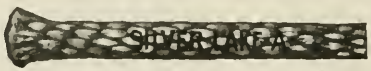

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But one valid objection has been made to the use of outside casements, being the necessity of hanging the screens and storm sash inside and opening them in some way to reach the sash whenever the sash requires opening or closing, the several types of casement sash adjusters hitherto available not having been designed to do away with this difficulty.

During the past year, however, to overcome this one difficulty, a new adjuster has been devised and placed on the market called the "Holdfast," strong and simple in construction and neat in appearance which easily operates the sash from the inside of the screen or storm window, thus making outside casements the most convenient, practical, and artistic of all windows for residence work where the sash of large size are not required by the character of the architectural style and purposes of the building. This device is the invention of a well known and successful Chicago architect, who has designed some of the most attractive houses in the Middle West and whose name is familiar on the Pacific Coast for his contributions to the Architectural Journals, Robt. S. Spencer, Jr., F. A. I. A.

Until the "Holdfast" was invented, no adjuster overcame the screen difficulty, although many of the most artistic residence designers in the country continued to employ casement sash almost entirely in their work, notwithstanding the difficulties mentioned.

As the "Holdfast" operates the sash without interfering with the screen or requiring it to be opened, no flies can enter and this feature of our adjuster will be particularly gratifying where our device is applied to windows in dining room and kitchen where ample ventilation is an absolute necessity.

The "Holdfast" adjuster is manufactured by The Casement Hardware Company, 175 State street, North Chicago, Ill., who issue a very valuable pamphlet on "English Casements" which they will send free to any of our readers who will write for same.

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